REPORT OF THE

CALIFORNIA INTERAGENCY TANKER TASK FORCE

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CALIFORNIA RESOURCES AGENCY
Huey D. Johnson, Secretary
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[redacted]

CALIFORNIA INTERAGENCY TANKER TASK FORCE

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TABLE OF CONTENTS

LIST OF FIGURES

PREFACE

California's Interagency Tanker Task Force was created by Secretary for Resources Huey Johnson at the request of nine members of the California Legislature, in order to:

- coordinate information and actions of State agencies regarding tanker-related issues;
- monitor the administrative, legislative and judicial activities of the Federal government with respect to tanker-related issues;
- communicate California interests, policies, and positions to Federal representatives; and
- identify and study tanker-related issues, and recommend appropriate legislative and administrative actions.

The Task Force divided itself into three working groups: Tanker Operations, Terminal and Port Operations, and Oil Spill Cleanup and Liability. The structure of our report reflects this division. The full Task Force has held 10 meetings, and the individual working groups have held additional meetings.

In May, 1978, the Task Force distributed a draft report for review and comment by interested parties. Numerous helpful comments, criticisms and suggestions were received, confirming the strength of public concern and interest in tanker safety and pollution abatement issues. We have incorporated these comments in this report where appropriate.

We have chosen not to include footnotes in this report, but can provide references and documentation for all statements of fact. The interpretations and

conclusions presented in the report are the product of our own deliberations. We have drawn on many published and unpublished sources of information in preparing this report. Congressional hearing records (primarily from the Senate Commerce Committee, the House Merchant Marine and Fisheries Committee, and the House Government Operations Committee) and reports (such as the Office of Technology Assessment's 1975 Oil Transportation by Tankers: An Analysis of Marine Pollution and Safety Measures) have been particularly useful. In addition, we wish to acknowledge the assistance generously provided to us by Mr. Arthur McKenzie of the Tanker Advisory Center, New York City.

INTRODUCTION

Tankers operating in California waters include foreign-flag tankers importing crude oil from Indonesia and the Middle East, United States-flag tankers delivering crude oil from Alaska — not only North Slope crude from Port Valdez, but also crude oil from fields in Cook Inlet in southern Alaska — and United States-flag tankers carrying crude oil and petroleum products between terminals in California and also from California refineries to Oregon. Tank barges are also in use, transporting products in the San Francisco Bay Area and along the North Coast, as well as providing bunkers (fuel) to vessels in port, primarily in Long Beach and Los Angeles Harbors.

On any given day, approximately 1,300,000 barrels of crude oil arrive in California ports from Alaska and foreign countries, and another 1,300,000 barrels of crude oil and refined products are loaded into tankers and tank barges for distribution along the coast. Some of the tankers importing crude oil to California are too large to call fully-loaded at petroleum terminals, and must lighter some or all of their cargo into smaller tankers or tank barges, either in port or in coastal waters. Hence, the actual volume of oil transferred in California ports and coastal waters is probably close to 3,000,000 barrels per day.

Tanker problems fall into three main categories: safety problems, involving the loss of lives and property resulting from tanker accidents such as the 1976 Sansinena explosion in Los Angeles Harbor; oil pollution, intentional or accidental, which occurs both during routine operations and as a result of tanker accidents such as the 1971 Oregon Standard-Arizona Standard collision under the Golden Gate Bridge; and air pollution, especially the release of sulphur dioxide and reactive hydrocarbon vapors — precursors to sulphate and smog formation — which pose

special problems for California.

Efforts to provide for safer and less-polluting tanker operations must address a wide range of topics. Aboard the tanker or tank barge itself, improvements can be made in the design features of the vessel, its navigation equipment and operating procedures — at sea, in port, during transfer operations — and the qualifications and training standards of its officers and crew. At terminal facilities, where most bulk petroleum transfer operations take place, measures can and should be taken to upgrade the training and qualifications of the personnel directly involved in transfer operations, and to improve "normal" transfer procedures in order to avoid the recurring oil spills which have plagued several California terminals, especially in the Bay Area. Other areas where improvements can be made include pilotage and tugboat assistance procedures, vessel traffic routing systems, port planning and risk management practices, and government inspection, communications, monitoring, and enforcement capabilities.

Steps should also be taken — at individual terminal facilities, on a port-wide basis, and on a regional basis — to strengthen preparations and contingency plans for response to fires, explosions, major oil spills, and other tanker-related emergencies. In addition, existing oil spill liability law — at both the State and Federal level — should be amended in order to provide prompt, equitable, and full compensation for damages caused by oil spills.

Some companies have voluntarily undertaken programs to improve the performance of their tankers. One major oil company, for instance, has installed inert gas systems on all of its tankers to reduce the risk of explosions, though this is not now required. Another company has developed a tank washing method, using crude oil in place of seawater, which promises to curb intentional tanker oil pollution.

Also, 30 United States-flag tankers have been built or ordered since 1974 with double bottoms (which can reduce both intentional and accidental oil pollution), though double bottoms are not now required.

On the other side of the coin, the shoddy operating procedures and inadequate or nonexistent maintenance programs of some tanker operators have caused or contributed to entirely-avoidable tanker accidents and resulting oil spills. The Sansinena explosion, for instance, would probably not have occurred, according to Congressional testimony of Coast Guard officials, if the ship had possessed and properly used an inert gas system. The Sealift China Sea ramming might have been avoided if the master had reported his equipment failures and deficiencies to port authorities, and entered port under tow. Finally, the official report of the Liberian inquiry into the Argo Merchant affair suggests that the ship may have been run aground deliberately in order to collect hull insurance.

The perils of the sea, together with the human capacity for errors, ensure that tanker accidents, oil pollution, and air pollution will continue to occur as long as tankers operate, in spite of all precautions. Still, numerous improvements can be made which would increase tanker safety margins and reduce the number and magnitude of casualties, oil pollution and air pollution incidents resulting from tanker operations. In the view of the Tanker Task Force, the cost of these improvements is likely to be far outweighed by the benefits in terms of tanker safety and pollution abatement which can be expected to result.

JURISDICTION ISSUES

Since the 1967 Torrey Canyon disaster, government authorities at all levels have instituted laws and regulations aimed at achieving safer and less-polluting

tanker operations. The powers and limits of each level of government have not yet been clearly sorted out. The following material describes the principal authorities at the international, national, and state levels, and briefly discusses two important jurisdiction issues: the difference, for purposes of jurisdiction, between United States-flag and foreign-flag tankers; and the division of jurisdiction over tankers between States and the Federal government.

A. INTERNATIONAL

Construction and design standards and navigation rules for ships in international or foreign waters are negotiated and periodically revised at conferences sponsored by the Inter-Governmental Maritime Consultative Organization, a United Nations agency commonly referred to as IMCO.

Proposed IMCO conventions are presented to the national legislatures of interested maritime nations for consideration, and enter into force after a specified number of nations have agreed to ratification. Each convention-drafting conference sets its own entry-into-force requirements. IMCO agreements dealing with tanker safety and pollution abatement standards generally require ratification by 15 nations whose combined merchant fleets comprise more than 50 percent of world merchant shipping tonnage before taking effect.

Efforts to achieve stronger tanker safety and pollution-abatement standards through IMCO are handicapped in several ways. Proposed IMCO standards are drafted through voluntary negotiations, and can be no tougher than a majority of the world's maritime nations are willing to accept. Many of the national delegations participating in convention-drafting conferences adhere to the views of their domestic shipowners and operators, which tend to be shaped primarily by economic considerations. Measures perceived by the world shipping community to have favorable economic consequences

often enter in force with little delay, while measures with unfavorable economic consequences may languish for years without sufficient ratifications to enter into force. For example, a 1966 IMCO load-line convention, which allowed tankers to carry more oil than had previously been permitted, sailed through drafting and ratification to take effect in mid-1968. On the other hand, a 1973 IMCO convention aimed at reducing marine pollution — which would require new expenditures by both tanker operators and signatory nations — had been ratified only by three minor maritime nations as of February 1978, when it was amended by IMCO.

In recent years, the United States has pushed for substantially tougher tanker safety and pollution abatement standards at IMCO conferences. To judge from IMCO's actions, though, a great majority of IMCO participants simply do not share the United States' sense of urgency regarding tanker safety and pollution abatement issues. In the wake of the disastrous winter of 1976-1977 — during which there were 14 widely publicized tanker accidents in or near U. S. waters — the United States announced its intention to act unilaterally to set tougher standards for tankers wishing to enter U. S. waters. Largely in response to this action, IMCO convened a Tanker Safety and Pollution Prevention conference in February, 1978, and drafted a proposed set of tanker standards. These proposed standards, known as the 1978 IMCO Protocols, have been submitted by the Carter Administration to the U. S. Senate for its consideration.

B. NATIONAL

The Coast Guard is the principal Federal agency with responsibility for establishing and enforcing Federal controls over all United States-flag tankers, and over all foreign-flag tankers entering United States waters to call at American

ports. The Coast Guard's authority comes from a variety of executive orders and laws, the most noteworthy of which is the Ports and Waterways Safety Act of 1972, as amended.

Title I of the Act gives the Secretary of the Department in which the Coast Guard is operating — currently the Department of Transportation — broad powers to control the movement and operations of all vessels in ports, harbors, and other waters subject to congested vessel traffic, bad weather, reduced visibility or other hazardous circumstances.

Title II of the Act applies only to oil tankers and to vessels carrying other bulk liquid cargoes designated as hazardous polluting substances under the Federal Water Pollution Control Act. Title II authorizes and directs the Secretary to promulgate rules and regulations setting minimum standards of vessel design, construction, alteration, repair, maintenance and operation for all United States-flag tankers, and for all foreign-flag tankers entering navigable waters of the United States, in order to provide for vessel safety and protection of the marine environment.

With regard to protection of the marine environment, the Act directs that the Secretary's rules and regulations include standards to:

- reduce the possibility of collision, grounding, or other accident;
- reduce cargo loss following collision, grounding, or other accident;
- reduce damage to the marine environment by normal vessel operations such as ballasting and deballasting, cargo handling, and other activities.

Since the passage of the Ports and Waterways Safety Act in 1972, the Coast Guard has issued a series of proposed regulations to abate tanker oil pollution, but almost none of these proposed regulations have been adopted in final form and put into effect. With regard to tanker construction and design requirements, the Coast Guard's stated policy has been to confine its rule-making actions to those which implement IMCO conventions or proposed conventions. As well, the Coast Guard has taken the position that it lacks the authority to distinguish in its rule-making between U. S.-flag tankers and foreign-flag tankers in U. S. waters. The practical effect of the Coast Guard's self-restraining actions has been to hold United States tanker design standards down to a level acceptable to the rest of the world shipping community.

On March 17, 1977, President Carter announced that he had instructed the Secretary of Transportation to develop new tanker construction, design, and equipment regulations. The new regulations, to apply equally to all United States- and foreign-flag tankers over 20,000 dwt calling at United States ports, would include the following specific provisions:

- double bottoms on all new tankers;
- segregated ballast on all new and existing tankers;
- inert gas systems on all new and existing tankers;
- backup radar systems, including collision avoidance systems, on all new and existing tankers;
- improved emergency steering equipment on all new and existing tankers.

These requirements would become fully effective within five years — that is, by March 17, 1982 — and would permit the use of alternatives where these could be shown to achieve the same degree of protection against pollution. The Coast Guard

issued proposed rules implementing these actions on May 16, 1977. In March, 1978, though, the Coast Guard announced its intention to await Congressional disposition of the 1978 IMCO Protocols and of pending tanker legislation before taking further action.

In May, 1977, the U. S. Senate passed a bill, S. 682, which would impose tanker construction, design, and equipment standards similar to those ordered by President Carter. The House of Representatives withheld action until the proposed 1978 IMCO Protocols were completed, and is now considering legislation which incorporates many of the provisions of the Protocols. Should this legislation be approved by the House in its present form, a conference will be necessary to reconcile the significantly different standards mandated in the Senate and House bills.

C. STATE

California has no State agency with overall responsibility for tanker operations in particular, or for maritime affairs in general, nor does California have a State-level counterpart to the Coast Guard. As a result, numerous State agencies with separate proprietary interests, permit, regulatory, and planning powers or responsibilities participate on an ad hoc basis in any State action involving tankers. The Coastal Commission and the (San Francisco) Bay Conservation and Development Commission have direct permit authority over virtually all development proposals along the California coast, and approval by one of these two agencies would be required for any new petroleum terminal or other tanker-related facility in California's coastal zone. In addition, the Coastal Act requires the Coastal Commission to review and certify the port master plans being prepared by the ports of Los Angeles, Long Beach, San Diego, and Port Hueneme. The Air Resources Board

has responsibility for abating California's air pollution, and is now developing rules aimed at reducing tanker reactive hydrocarbon emissions in California's coastal waters. The State Lands Commission is developing regulations to upgrade safety and pollution abatement standards at marine petroleum terminals in California. Other State agencies which might be involved in tanker-related actions are the Attorney General's Office, Caltrans, Department of Fish and Game, Department of Navigation and Ocean Development, Division of Oil and Gas, Energy Resources Conservation and Development Commission, Governor's Office of Planning and Research, Public Utilities Commission, Resources Agency, and the Water Resources Control Board. At the local level, port authorities, pilotage boards, fire departments and other local agencies exercise a variety of controls over tanker operations and procedures in California ports.

U. S.-FLAG TANKERS VS. FOREIGN-FLAG TANKERS

Under Federal law commonly known as the Jones Act, all cargo carried from one United States port to another must travel in vessels which are built in the United States, manned by United States citizens, and registered under the United States flag. U. S.-flag tankers engaged in domestic trade — such as the tankers carrying Alaskan crude oil from Port Valdez to California ports — are therefore completely sheltered from foreign-flag tanker competition.

Under international law, the United States is free to hold United States-flag tankers to standards tougher than those negotiated through IMCO. Because of the Jones Act, United States-flag tankers engaged in domestic trade can be held to such higher standards without regard for any reduction in competitiveness vis-a-vis foreign-flag tankers, or for any other international consequences.

United States-flag tankers engaged in foreign trade are eligible for construction-differential and operating-differential subsidies from the Federal Maritime Administration to offset prevailing differences in construction costs and crew wages between the United States and foreign countries. Hence, setting construction, design, and equipment standards for these tankers above those negotiated through IMCO might increase the construction-differential subsidies for which such tankers would be eligible, but it should not affect the operating-differential subsidies, and thus should not affect the ability of United States-flag tankers to compete with foreign-flag tankers in the foreign trade.

United States jurisdiction with regard to foreign-flag tankers in U. S. waters is less complete than it is for U. S.-flag tankers. IMCO's 1960 Safety of Life at Sea (SOLAS) convention establishes certain minimum safety standards not only for tankers, but for all vessels engaged in international trade: cargo vessels, tank vessels, and passenger vessels. Every maritime nation in the world has ratified SOLAS 1960. If a foreign-flag vessel enters U. S. waters and possesses a valid certificate from the nation under whose flag the vessel sails indicating compliance with the requirements of SOLAS 1960, the Coast Guard will not subject that vessel to a complete inspection such as it would if the vessel did not possess that certification. The Coast Guard can and does examine foreign-flag tankers in U. S. waters for compliance with certain safety and pollution-abatement standards. However, the IMCO conventions do impose restrictions on U. S. freedom of action regarding foreign-flag tankers in U. S. waters. The United States is free to renounce IMCO treaties and adopt tougher standards for all vessels in U. S. waters, but such action would have international ramifications. Setting tougher standards for U. S.-flag vessels would not.

The 1978 IMCO Protocols, now pending in the Senate, are weaker with respect to tanker construction and design requirements than both President Carter's order of March 17, 1977 and Senate Bill S. 682. Congress is going to have to choose whether to accept the IMCO standards as adequate for foreign-flag tankers in United States waters, to reject them altogether and set tougher standards unilaterally, or to attempt to carve out a compromise position somewhere in between. Whatever course Congress takes will have domestic consequences — 95 percent of United States foreign oil imports are carried in foreign-flag tankers — and significant international repercussions.

FEDERAL JURISDICTION VS. STATE JURISDICTION

In 1975, the State of Washington enacted a law regulating the design, size, and movement of tankers in Puget Sound. This law contained three main provisions:

1) A prohibition against any tanker larger than 125,000 dwt entering Puget Sound.
2) A requirement that all tankers larger than 50,000 dwt carry a State-licensed pilot while in Puget Sound.
3) With the exception of tankers in ballast, a requirement that all tankers of 40,000-125,000 dwt be escorted by a tug or tugs with an aggregate shaft horsepower equivalent to 5 percent of the tanker's deadweight tonnage while in Puget Sound, unless the tanker possesses all of the following features:
   - shaft horsepower in the ratio of one horsepower to each 2½ deadweight tons, and
   - twin screws, and

— double bottoms, and

— two functioning radars, one with a collision avoidance system.

ARCO challenged this law in Federal court, arguing that the regulation of tanker design standards had been preempted by Federal law, particularly the Ports and Waterways Safety Act. The Supreme Court agreed to review the case, and handed down its decision on March 6, 1978.

The Court struck down the prohibition on tankers larger than 125,000 dwt in Puget Sound. The Court held that States could not set stricter tanker size or design requirements if their purposes were the same as those of the Ports and Waterways Safety Act, namely vessel safety and protection of the marine environment from oil pollution. The Court also noted the Congressional desire to achieve uniform tanker design criteria throughout the United States. At the same time, the Court recognized a State's right to set stricter safety standards or safety equipment requirements for structures (such as petroleum terminals), and also a State's right to enforce laws for other purposes, such as abatement of air pollution.

With regard to the requirement for a State-licensed pilot on all tankers in Puget Sound, the Court held that the State was permitted to set pilotage requirements for any vessel, United States-flag or foreign-flag, engaged in foreign trade, but that the State was prohibited under Federal law from establishing any pilotage requirement for vessels engaged in domestic trade, because of the direct conflict with Federal statute.

With regard to the tug-escort provision for tankers not meeting the specified design or construction standards, the Court held that the tug-escort provision was

not a design requirement, but rather an operating rule arising from the peculiarities of local waters that call for special precautionary measures. This being the case, and in the absence of any Federal tug-escort rule, the Court held that a state is free to set its own rules until such time as Federal tug-escort rules are promulgated.

Two dissenting opinions were filed by Supreme Court Justices, one arguing that the State's tanker size limitation should have been upheld, the other arguing that the State's tug-escort provision should have been struck down. It should also be noted that the day after the Supreme Court handed down its decision, the Secretary of Transportation issued a rule prohibiting tankers over 125,000 dwt from entering Puget Sound.

In light of the Court's decision, the following guidelines would appear to apply to State actions with regard to tankers and related facilities:

1) States cannot hold tankers to size and design standards for purposes of vessel safety or protection of the marine environment which are stricter than the standards set by the Federal government.
2) States can set stricter tanker standards for other purposes, such as abatement of air pollution.
3) States can set stricter tanker operating requirements, such as tug-escort provisions, if special precautions are needed to deal with unusual local conditions.
4) States can set stricter safety and safety equipment requirements for petroleum terminal facilities than those set by the Federal government.

I. Tanker Operations

SECTION A: DESIGN AND EQUIPMENT STANDARDS

The flag of registry may or may not influence a given tanker's performance with regard to safety, oil pollution, or air pollution, but it clearly affects the extent to which the United States can control the tanker's design and equipment standards. The United States can hold U.S.-flag tankers -- especially those engaged in domestic trade -- to design and equipment standards tougher than those negotiated at international forums for the world tanker fleet without regard for international repercussions. The United States can also hold foreign-flag tankers wishing to enter American ports to tougher standards, but such unilateral action could have significant international consequences -- some favorable, some unfavorable -- which should be taken into account. For this reason, the recommendations in this section are directed specifically at U.S.-flag tankers, and the issue of suitable design and equipment standards for foreign-flag tankers wishing to enter American ports is dealt with in the discussion of the IMCO 1978 Protocols at the end of this section.

SEGREGATED BALLAST

After discharging its cargo, a tanker rides high in the water, to a point where its rudder and propeller may not be fully immersed. To assure efficient propulsion and steerage, seawater ballast is pumped aboard, usually into the cargo tanks. Ballast requirements ordinarily amount to 25-35 percent of the tanker's cargo capacity, but as much as 45% may be taken aboard during rough weather. If the ballast water is placed in uncleaned tanks, it will mix with

oil clinging to the sides and bottom of the tank during the ballast voyage. This clingage can be as much as 0.5 percent of the original cargo. Before taking on new cargo, the tanker must dispose of this oil-ballast water mixture, which can result in substantial water pollution. In addition, the practice of pumping seawater ballast into uncleaned cargo tanks also can displace hydrocarbon vapors into the atmosphere, thus posing air pollution problems.

One way to avoid contaminating ballast water with oil is to segregate ballast tanks in oil-free spaces within the tanker, thereby ensuring that ballast water never comes into contact with oil, and can be freely pumped back to the ocean when no longer needed. Segregated ballast space can be provided in a number of ways, some of which not only provide the necessary ballast capability, but also reduce the likelihood of oil spillage if the tanker's side or bottom is breached -- for example during a low-energy collision or grounding.

Existing Coast Guard regulations require that tankers 70,000 dwt. and larger constructed under contracts awarded after December 31, 1974 be provided with segregated ballast capacity. In addition, the regulations require that this segregated ballast space be distributed to protect at least 45% of the side and bottom areas of the tanker's cargo space. Among the alternatives which the Coast Guard would consider for meeting this segregated ballast requirement are a double bottom, double sides, double hulls (combination of double sides and double bottom), "L" shaped wing tanks, and "J" shaped wing tanks.

FINDING: Of the many tanker design options capable of providing sufficient segregated ballast capacity, double hulls provide the greatest degree of protection against oil outflow in the event of a ramming, collision, or grounding. Double bottoms or double sides alone would

increase the capital cost of a new tanker by about 3%, while a double hull would increase the cost by about 5%. For existing tankers, the cost of retrofitting a double bottom and/or double sides would be much greater, and the working life of the tanker during which this added cost could be recovered would be shorter. It may be necessary to distinguish between new and existing tankers regarding the means by which segregated ballast space is provided.

RECOMMENDATION:

1. All new U.S.-flag tankers should be required to be built with double hulls.

2. All existing U.S.-flag tankers which lack segregated ballast capacity should be required to retrofit segregated ballast capacity, however achieved, at the earliest possible date.

CRUDE OIL WASHING

Tank vessel cargo tanks are washed before taking on clean ballast, before loading certain products where cargo purity is important, before crew members enter the tanks to perform various maintenance tasks, before the tanker enters drydock, and for other purposes. Historically, tanks have been washed with seawater, which creates a disposal problem — and a pollution source — comparable to oily ballast water.

One company has recently developed a method for washing cargo tanks with petroleum. This method, known as Crude Oil Washing (COW), greatly reduces the amount of seawater needed for tank cleaning, and also results in cleaner tanks, perhaps because petroleum's solvent qualities are superior to those of seawater.

Despite its name, this procedure can also be used to wash tanks on some product tankers.

FINDING:

1. COW can reduce tanker oil pollution from tank cleaning, but it can also generate more hydrocarbon vapors within cargo tanks than result from seawater washing. This increase in hydrocarbon vapors poses safety problems (increased risk of explosions), and can result in increased tanker reactive hydrocarbon emissions — an air pollution problem of special concern to California. The safety problem can be minimized by requiring the use of inert gas systems during COW operations. The air pollution problem is more difficult to solve, and may require either the use of vapor recovery systems to prevent the hydrocarbon vapors from escaping to the atmosphere, or an outright prohibition on the use of COW within California ports and coastal waters.

2. The combined use of crude oil washing and segregated ballast can significantly reduce the two major sources of intentional or operational tanker oil pollution — tank washings and oiled ballast water — beyond what would result from the use of either method alone. It has been proposed that tanker operators be permitted to substitute the use of COW for the retrofit of segregated ballast capacity. Inasmuch as the two procedures address separate (though related) pollution sources, COW and SBT are not alternative solutions to the same problem, but rather complementary solutions to separate problems.

RECOMMENDATION:

1. All U.S.-flag crude oil tankers should be required to retrofit and use the Crude Oil Washing method for cleaning cargo tanks, and the Coast Guard should study the feasibility of requiring the use of a comparable method on suitable product tankers.

2. However, tankers should not be permitted to use the COW method in California's ports and coastal waters until Air Resources Board reactive hydrocarbon emission standards are in force, and tanker operators develop equipment or procedures which enable COW to be undertaken without violating those standards.

3. Tanker operators should not be permitted to substitute use of the crude oil washing method for the installation or retrofit of segregated ballast capacity.

LOAD-ON-TOP

Some tanker operators employ a procedure known as Load-On-Top to reduce oil pollution from both ballasting and tank-cleaning operations. The basic Load-On-Top procedure works as follows: a tanker takes on seawater ballast into uncleaned tanks and gets underway toward its next destination. En route, tanks not used for ballast are washed, the resulting oil-water mixture is pumped into the tanker's slop tank, and seawater ballast is loaded into these now-clean tanks. In the uncleaned tanks containing seawater ballast, meanwhile, the oil will have tended to accumulate toward the top of the seawater because of its lower specific gravity, with the water toward the bottom comparatively, though not entirely, oil-free. This almost-clean seawater is discharged to

the ocean, and the remaining oil-mixture is pumped to the slop tank. These now-empty tanks are washed, with the resulting oil-water mixture pumped to the slop tank.

At this point, all of the tanker's cargo tanks have been washed, the tanker is carrying clean seawater ballast, and the oil-water mixture is slowly separating in the slop tank. When the tanker arrives at its next loading port, the almost-clean seawater at the bottom of the slop tank is discharged, and the remaining oil-water mixture either pumped ashore to a suitable treatment facility, or retained on board and new crude oil loaded on top (hence the name).

In practice, however, LOT has several shortcomings. LOT is not suited for use by tankers carrying certain products where cargo purity is important, and is thus not in common use on product tankers. Moreover, some refineries refuse to accept crude oil containing water-contaminated slops generated by the LOT method. The length of a tanker's return voyage may be too short, or sea conditions too rough, for effective oil-water separation to occur. The decanting of sea water generally continues until oil is visually observed or electronically detected in the discharge, and a lapse of attention or an equipment failure can result in substantial outflow of oil before the discharge is stopped. Finally, effective use of the LOT procedure depends in large measure on the good faith, training, and conscientious effort of shipboard officers and crew, and as such is difficult to enforce by shore-based personnel.

FINDING: The Load-On-Top procedure can reduce the amount of oil discharged by a tanker in the course of ballasting and tank-cleaning operations. However, there are many circumstances under which LOT cannot be effectively employed. Even under ideal circumstances, LOT does not eliminate

tanker oil pollution from either ballasting or tank-cleaning operations, nor is it as effective as the combined use of segregated ballast and Crude Oil Washing.

RECOMMENDATION: Tanker operators should not be permitted to substitute use of the Load-On-Top procedure for the retrofit of segregated ballast capacity and the use of the Crude-Oil-Washing method.

INERT GAS SYSTEMS

When a tanker is fully loaded, the air in the cargo tank space between the surface of the oil and the top of the tank is usually too rich in hydrocarbon vapors for combustion to occur. For this reason, fires or explosions aboard fully-loaded tankers are extremely rare. After a cargo tank is emptied, though, hydrocarbon vapors at a concentration within the range of flammability usually exist somewhere in the tank. If a flame or spark is introduced, an explosion or fire can occur.

Scientists do not fully understand the causes of tanker explosions. Preventative efforts to date have focussed on minimizing potential ignition sources, and maintaining the concentration of hydrocarbon vapors or oxygen within cargo tanks above or below the levels at which combustion can be achieved and sustained.

FINDING: One way to reduce the fire and explosion hazard is to install and use an inert gas system, which pumps low-oxygen stack gases into the cargo tanks, thereby reducing the oxygen level within the tank to a point too low for combustion to occur. According to Congressional testimony of Coast Guard officials, the Sansinena explosion would probably not have occurred if that tanker had possessed and properly used an inert gas system.

RECOMMENDATION: All United States-flag tankers should be required to install inert gas systems.

STEERING GEAR

FINDING: A Coast Guard study found that 87 casualties involving tankers over 20,000 dwt in United States waters between 1963 and 1976 involved the failure of steering gear or steering gear control systems. These incidents underscore the importance of independent back-up and emergency steering systems. Existing Coast Guard regulations require tankers to have "main and auxiliary steering apparatus."

RECOMMENDATION:

1. All United States-flag tankers should be required to have two separate steering gear control systems, including two differential gear boxes, and an entirely separate after steering system for emergency use.

2. The after steering system should have a telephone communication link with the bridge and with the engine room, and should be required to be manned whenever a tanker moves into, within, or out of any United States port.

SHIPBOARD ELECTRONIC AIDS

FINDING: Electronic devices are increasingly used aboard vessels of all kinds to assist in both vessel operations and navigation. Such devices as radar, collision avoidance systems, LORAN-C, fathometers, and electronic gyroscope systems cannot substitute for alert watchkeeping and good seamanship, but they are valuable supplements. These electronic devices are in varying

degrees vulnerable to malfunctions, and generally remain out of service until a shore-based manufacturer's representative can come aboard to make necessary repairs.

RECOMMENDATION:

1. The Coast Guard should consider requiring that at least one of the officers aboard every United States-flag tanker pass a Coast Guard-approved or Federal Communications Commission-approved training course in the shipboard testing and repair of electronic devices required on tankers.

2. The Coast Guard should consider requiring that shipboard electronic equipment be so constructed by the manufacturer as to enable shipboard testing and repairs. For instance, it might be feasible to design equipment on a modular basis with spare modules available onboard for replacement by a qualified electronics officer.

FINDING: Transponders, LORAN-C retransmission devices, trip recorders, and other electronic "black boxes" have been conceived or developed in recent years which promise to improve existing vessel navigation, position-fixing, and monitoring capabilities. These and other such electronic devices, though, share a basic problem - their practical value has not been established, primarily because there has been no comprehensive field testing program to gather information based on actual shipboard and shoreside use.

The fleet of tankers carrying Alaskan North Slope crude oil from Port Valdez to the U.S. West Coast constitutes an excellent test population to conduct experiments and gather information on these and other

promising electronic devices. These tankers are all under complete U.S. control; they are operated by and on behalf of major American oil companies with substantial tanker fleets and tanker experience, and most of them will be shuttling back and forth between and among the same ports for the next decade or more.

RECOMMENDATION: The Coast Guard should conduct an aggressive field research and development program to determine the present value and the potential value of such electronic devices as transponders, LORAN-C retransmission devices, and trip recorders. As part of this effort, the Coast Guard should use the Port Valdez-U.S. West Coast tanker fleet to conduct appropriate field tests, experiments, and demonstrations.

RADAR

FINDING: Radar is a useful device for general navigation purposes, and for determining the presence and movement of other ships and objects in the vicinity of a ship. To increase the likelihood that tankers will have a functioning radar set at all times, the Coast Guard has proposed a requirement that all tankers over 10,000 gross tons have two separate radars.

RECOMMENDATION: All U.S.-flag tankers should be required to have two separate radars.

COLLISION AVOIDANCE SYSTEMS

FINDING: A collision avoidance system is an electronic device which uses radar data to compute and graphically display the relative motion and velocity of vessels in the vicinity of the ship. It can be programmed to sound an alarm when another vessel is on a collision course.

RECOMMENDATION: All United States-flag tankers should be required to possess a collision avoidance system which is capable of functioning with each of the two radars called for above.

THE 1978 IMCO PROTOCOLS

The Intergovernmental Maritime Consultative Organization (IMCO) convened an International Conference on Tanker Safety and Pollution Prevention in London during February, 1978. With due regard for the United States' threat of unilateral action, the conferees negotiated a set of proposed tanker design, equipment, and inspection standards. These proposed standards were drafted as amendments, or protocols, to two earlier IMCO conventions, and are known as the 1978 IMCO Protocols.

The 1978 Protocols would impose substantially tougher standards than any previous IMCO conventions, but they are weaker than standards proposed by the United States in several key respects. The Protocols would impose no double-bottom requirement of any kind, let alone a double hull; they would permit existing tankers over 40,000 dwt to choose between retrofitting segregated ballast capacity and a crude oil washing system, and would exempt all existing crude oil tankers under 40,000 dwt from any segregated ballast requirement; they would exempt existing crude oil tankers of 40,000 dwt or less from the inert gas system retrofit requirement if the Administration of the country under whose flag the tanker is registered considers it to be "structurally impractical"; and they would exempt new product tankers of 30,000 dwt or less from the segregated ballast requirement. These provisions of the 1978 IMCO Protocols directly conflict with both President Carter's order of March 17, 1977 and the provisions of Senate bill S. 682.

Strictly on grounds of tanker safety and pollution abatement, the Tanker Task Force considers the 1978 IMCO Protocols to be inadequate, and would recommend that Congress and the Carter Administration reject them, and instead hold foreign-flag tankers entering United States ports to the same standards we recommend for United States-flag tankers. In addition to the comparative drawbacks listed above, at least three other arguments can be made for rejection of the 1978 IMCO Protocols. In prescribing substantially tougher construction and design requirements for new tankers than for existing tankers, the Protocols create a strong financial incentive for tanker owners to put off investing in new tankers, and to retain existing tankers in service for as long as possible. In view of the substantial surplus of tanker tonnage now available in the world fleet, the main benefits of the Protocols will not be realized for at least ten years. In contrast, unilateral action by the United States could take full effect — as far as United States' waters are concerned — within whatever time frame Congress and the Administration choose to impose. Second, the United States has advocated stronger pollution abatement measures in international forums than any other major maritime nation, and if the United States chooses to accept the IMCO 1978 Protocols as adequate in their present form, no other nation is likely to push for stronger standards. Finally, unilateral action by the United States would encourage improvements in the world tanker fleet above the proposed IMCO standards simply because the United States imports more crude oil than any other country in the world — 95% of which is carried in foreign-flag tankers.

On the other hand, arguments can be made in favor of United States ratification of the 1978 Protocols. First is the general proposition that tankers operate world-wide, and that tanker safety and pollution problems affect the world ocean, so that coordinated international action — as opposed to unilateral action — is the best approach to solutions. Second, despite their substantial drawbacks,

the 1978 Protocols would impose considerably higher international requirements than now exist. Since United States pressure was the main reason for the improvements, it is likely that United States rejection would lead to world-wide rejection. This might mean that greater protection of United States' marine and coastal resources would be achieved at the expense of foregoing the improvements embodied in the Protocols for the rest of the world ocean. Finally, if the marine and coastal environments of the United States and the world can survive the several decades of useful life left in the existing world tanker fleet, then the new tankers are apt to be reasonably safe and reasonably nonpolluting, except that most won't have double bottoms or double hulls, and many won't have segregated ballast.

FINDING: The 1978 IMCO Protocols in their present form contain both substantial benefits and substantial drawbacks. Neither ratification nor rejection of the Protocols in their present form appears to be a completely desirable course. If the Senate agrees to ratify the Protocols only after attaching suitable reservations and conditions, it may be possible to retain most of the best features of each alternative. Whether the Senate ratifies the IMCO Protocols or not, the U.S. can still set tougher standards for U.S-flag tankers.

RECOMMENDATION: Should the Senate see fit to ratify the 1978 IMCO Protocols, as the Carter Administration recommends, it should do so only after attaching several reservations and conditions. These reservations and conditions ought to include the following:

1. Reservation of the right to renounce the Protocols at any time and set higher standards for foreign-flag tankers in U.S. waters, effective immediately, and not after the one-year waiting period after renunciation which is

specified in the Protocols;

2. The condition that every foreign-flag tanker wishing to enter a United States port must provide the Coast Guard with 48-hour prior notification of intent to do so, with this notification accompanied by a certified copy of that tanker's complete casualty record as maintained by its classification society, and the identification of the owner or owners of both the tanker and its cargo;

3. Reservation of the right to deny entry altogether, or to require individual tankers to follow special operating requirements including, but not limited to, the use of a tug escort and the presence on the bridge of an experienced Coast Guard officer throughout the tanker's stay in United States waters. These and/or other suitable conditions should be imposed by the Coast Guard on individual tankers warranting such special attention on the basis of Coast Guard examinations and such criteria as the tanker's age, size, construction, design and equipment characteristics, and casualty record, especially those casualties involving oil spillage, loss of steering or propulsion, collision, ramming, grounding, etc.

SECTION B: OFFICER AND CREW TRAINING, LICENSING, AND WORK STANDARDS

USE OF SIMULATORS

FINDING: Several companies and government agencies have developed fairly realistic bridge simulators, comparable to the airplane simulators long used in the Air Force and airline industries. Some companies which own or

charter tankers have voluntarily set up programs to train deck officers on such simulators.

RECOMMENDATION: All deck officers and pilots should be required to demonstrate their proficiency on a simulator or aboard ship to the Coast Guard's satisfaction as a condition of obtaining and renewing their licenses and endorsements, especially those officers and pilots who will be conning VLCCs.

FINDING: There are three such bridge simulation facilities in the United States, and not all of these are suited for the testing program recommended above. Additional bridge simulation facilities may need to be built in order to implement this recommendation in a timely fashion.

RECOMMENDATION: Congress should consider appropriating the needed funds to construct additional bridge simulation facilities.

FINDING: Graduates of California's Maritime Academy at Vallejo serve as deck and engine room officers in the United State Merchant Marine. At present, the Academy is seeking funds to obtain equipment needed to establish radar simulation, diesel engine simulation, and tanker cargo loading system simulation facilities for cadet training purposes. It should be noted that these simulation facilities would not be appropriate for the proficiency testing of bridge officers called for above, but would instead upgrade the facilities available at the Academy for the training of future United States Merchant Marine personnel. The amount of funds required by the Academy to establish these three simulation facilities is less than $100,000.

RECOMMENDATION: The Task Force supports these proposed facilities, and urges the Legislature to consider providing the funds needed by the Academy.

TANK BARGE MANNING STANDARDS

There is substantial tank barge traffic within the Bay Area. A series of oil spills from tank barges at petroleum terminals in the Carquinez Straits area has aroused concern regarding the manning standards and work hour limitations presently imposed on tank barges operating within the Bay Area.

In one recent incident, a tankerman fell asleep while his tank barge was loading oil at a petroleum terminal near Martinez. Apparently, none of the terminal employees noticed either that the tankerman was asleep, or that the barge was filled and overflowing. By the time the tankerman awoke and sounded an alarm, an estimated 6,900 gallons of oil had overflowed into the Carquinez Straits to foul several miles of the Martinez shoreline. In a earlier incident at a different terminal in the Bay Area, the same tankerman had fallen asleep while his tank barge was loading oil, and another oil spill resulted.

At an administrative proceeding regarding the second spill, the tankerman was found to have been negligent, and his tankerman endorsement was suspended for two months. It was brought out at the hearing that the tankerman had slept only 2½ hours during the preceding 21 hours, and had been on duty the other 18½ hours, notwithstanding a union contract provision allowing a maximum of 16 hours work in any 24-hour period.

FINDING: The Coast Guard has the authority to set manning standards and work hour limitations for all tank vessels in the navigable waters of the United States, but has not yet set nation-wide standards for tank vessels which operate exclusively on inland waters. In the ports of Los Angeles/Long Beach, labor and management representatives have agreed to limit a tankerman's work day to 12 hours in any 24-hour period. In the Bay Area,

a similar agreement has been reached restricting a tankerman's working day to 16 hours in any 24-hour period.

RECOMMENDATION:

1. The California Senate Select Committee on Maritime Industry should hold hearings on tank barge manning standards and work hour limitations in the Bay Area, and invite representatives of labor, management, terminal operators, and the Coast Guard to give testimony on the need for changes to the existing agreements.

2. The Coast Guard should issue regulations setting nation-wide manning standards and work-hour limitations for tank vessels and tank barges operating exclusively in inland waters. At a minimum, these regulations ought to limit a tankerman's work day to 12 hours during any 24-hour period.

3. As an interim measure pending such nation-wide action, the Officer in Charge of Marine Inspection for the 12th Coast Guard District should use his existing authority to set such a limit for tankermen employed on tank vessels or tank barges operating exclusively in inland waters in the Bay Area.

TANKERMAN LICENSING REQUIREMENTS

FINDING: Existing requirements for obtaining a tankerman's endorsement are minimal. In essence, if a person has a merchant mariner's document, can pass two written tests, one of which is an open-book test on pollution law, and can find a company willing to vouch that the person has made a certain number of trips on a tank barge, or tank vessel, and that the company is willing to employ that person, then that person qualifies to receive a tankerman's endorsement, which is good for an indefinite term. In 1977, the Coast Guard issued proposed regulations which would set stricter

requirements for obtaining a tankerman's endorsement, but has since taken no action to put these revised requirements into effect.

RECOMMENDATION: The Coast Guard should issue final regulations to impose stricter requirements for obtaining a tankerman's endorsement, and should make the endorsement valid for a fixed term of not more than five years. Renewal of the endorsement should be contingent upon satisfactory performance during the term of the previous license.

SECTION C: VESSEL TRAFFIC SERVICES

The Ports and Waterways Safety Act of 1972 authorizes the Secretary of the Department in which the Coast Guard is operating (now Transportation) to establish and operate vessel traffic services (VTS) in ports, harbors, and other waters in the United States subject to congested vessel traffic. Many different kinds of vessel traffic services can be set up. In some areas, a series of navigation buoys marking safe channels may suffice. In other areas, a traffic separation scheme (separated one-way vessel traffic lanes) with radar surveillance to monitor compliance may be necessary. Participation in the VTS can be made voluntary or mandatory. Ship movements within the VTS can be at the direction of the Coast Guard monitors, or may be left to the discretion of a ship's master or pilot.

In California, there are now three vessel traffic services: one in the San Francisco Bay area; a traffic separation scheme (TSS) running from Point Conception through the Santa Barbara Channel to Point Fermin; and a traffic separation scheme in the Gulf of Santa Catalina along the southern approaches to the Ports of Los Angeles and Long Beach.

SAN FRANCISCO BAY VTS

The San Francisco Bay Area VTS in its present form was established after

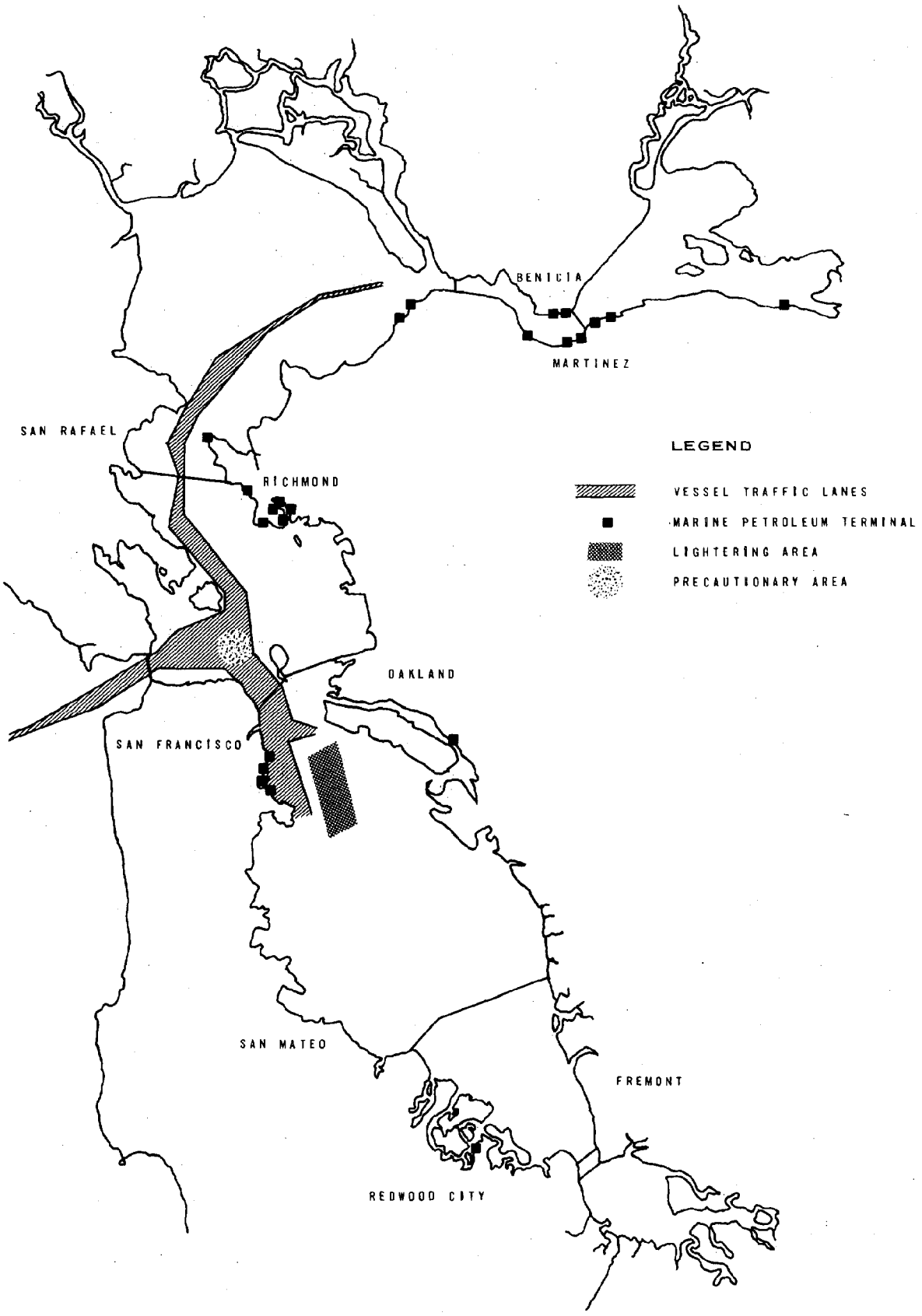

FIGURE 1 - SAN FRANCISCO BAY : EXISTING MARINE PETROLEUM OPERATIONS

a collision between the tankers Oregon Standard and Arizona Standard under the Golden Gate Bridge in 1971. The VTS consists of a traffic separation scheme and precautionary area, a radar monitoring system, and a central communications system (Figure 1). The VTS is voluntary, in that vessels are free to enter, leave, or move within the traffic lanes, the precautionary area, and the rest of the Bay whenever they wish. Vessels can request information from the Coast Guard on the movement of other vessels within the Bay, or the Coast Guard can offer such information to particular vessels, but complete control of vessel movement resides with the vessel master or pilot. Most, but not all, vessels in the Bay Area request vessel movement information from the Coast Guard monitors on a voluntary basis. Only one collision has occurred in the Bay since the VTS was set up, and that accident did not involve any injuries or oil spillage.

FINDING: Under the Ports and Waterways Safety Act, the Coast Guard has the authority to direct vessel movements, but has chosen not to exercise this authority in the Bay Area VTS to date.

RECOMMENDATION: To increase the margin of safety in the Bay Area VTS, the Coast Guard should require all vessels moving within or through the VTS area to comply with the VTS, and should require all vessels to provide Coast Guard monitors with advance notice of intended movements into, within, or out of the VTS area.

FINDING: The Coast Guard has installed LORAN-C retransmission devices on several vessels which regularly call at Bay Area ports in order to compare vessels' positions as computed by shipboard LORAN-C, and relayed to shore by means of the retransmission devices, with vessel positions as determined by shore-based radar. The information gathered during these field tests should enable the Coast Guard to determine the present value

and potential application of LORAN-C retransmission devices. This will in turn assist the Coast Guard in establishing future shipboard equipment requirements, as well as in designing VTS monitoring systems.

RECOMMENDATION: The Tanker Task Force commends the Coast Guard for its initiative in undertaking this research, and strongly supports the continuation and expansion of such research and development efforts.

FINDING: Radar coverage within the Bay Area is partially restricted by the Richmond-San Rafael Bridge, the Richmond-Vallejo Bridge, and the configuration of the coastal hills in Contra Costa county. Several of the existing petroleum terminals in these areas of reduced radar coverage are planning to increase their petroleum transfer operations.

RECOMMENDATION: The Coast Guard should hold hearings and conduct studies to determine whether installation of additional facilities to improve radar coverage of these areas is warranted. If the Coast Guard determines that such additional radar facilities are warranted, California's Congressional delegation should support the Coast Guard's request for the necessary appropriations.

POINT CONCEPTION-POINT FERMIN TSS

The Coast Guard has established a traffic separation scheme from Point Conception through the Santa Barbara Channel to Point Fermin. The system consists of a one mile-wide traffic lane for north-bound vessels, a one mile-wide traffic lane for south-bound vessels, and a two-mile separation zone between the traffic lanes (figure 2). This TSS has been officially recognized by IMCO, and appears

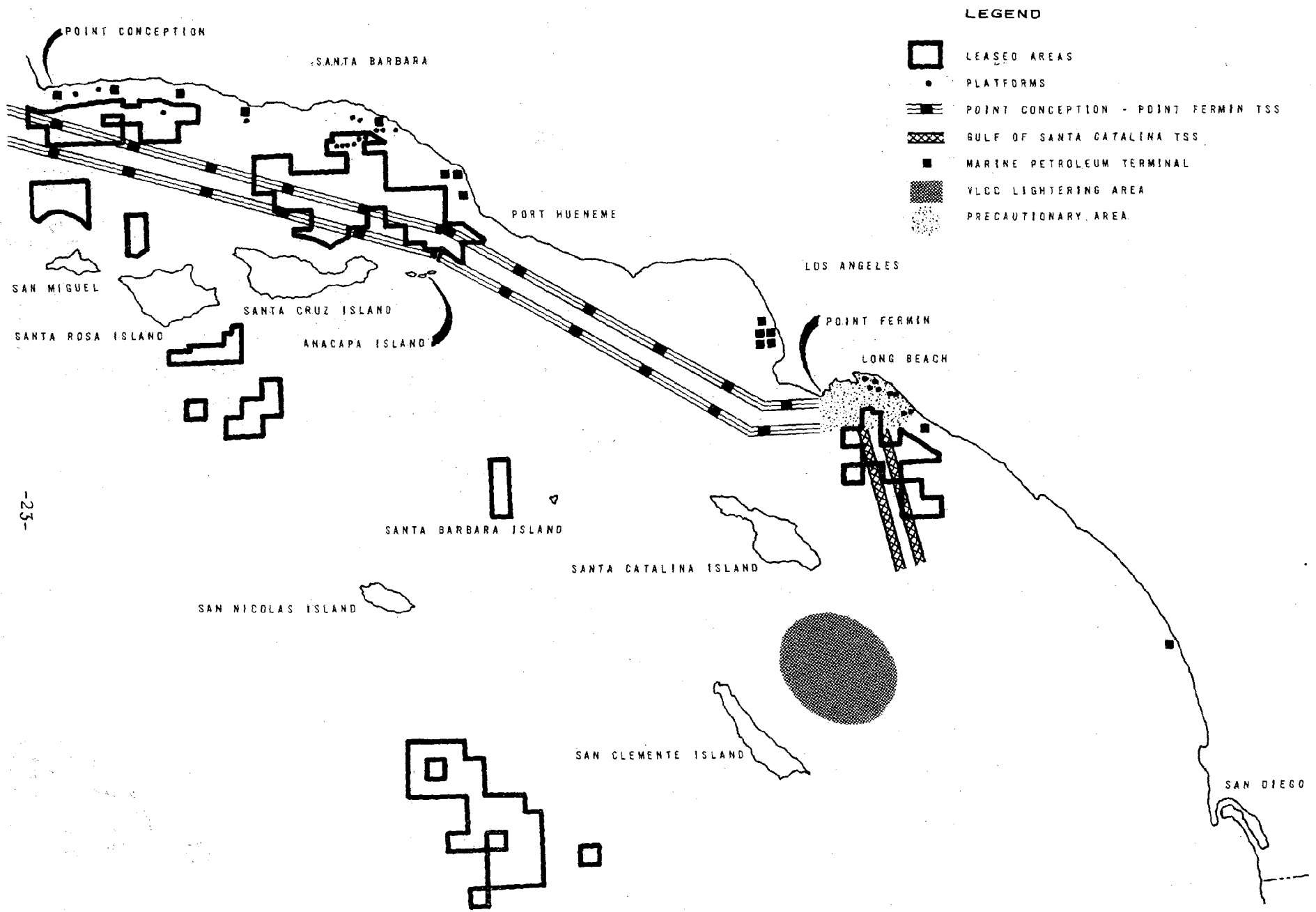

FIGURE 2 - SOUTHERN CALIFORNIA: EXISTING MARINE PETROLEUM OPERATIONS

as recommended traffic routes on all navigation charts of this area produced by leading maritime nations.

Tanker traffic in the Santa Barbara Channel includes tankers carrying Alaskan crude oil and refined products to Southern California, tankers in ballast returning to Alaska, tankers shuttling between Bay Area and Southern California terminals, and tankers and tank barges serving terminals in the Channel area. An offshore terminal storing and loading crude oil from the Hondo field in the western Channel into tankers or tank barges is scheduled to commence operations later this year.

FINDING: A bill, H.R. 2456, has been introduced in the House of Representatives which would prohibit tankers carrying Alaskan oil from moving through the Santa Barbara Channel. This would force these tankers to go outside the Channel, and thus would probably reduce the risk of a major tanker oil spill inside the Channel. However, this action may increase the risk of oil spills elsewhere in California waters, and the vessel safety implications of such a routing scheme are not now clear. To a degree, the criteria of vessel safety, oil spill avoidance, and air pollution avoidance dictate different "best" routes. Information now available regarding the vessel safety, oil pollution, and air pollution implications of the various tanker routing options available in the Channel area is not sufficient for the Tanker Task Force to identify one particular routing scheme as clearly preferable.

RECOMMENDATION: Enactment of H.R. 2456 in its present form would be premature. For now, tankers carrying Alaskan crude oil should be permitted to use the Santa Barbara Channel. In view of the increased oil spill and vessel safety risks associated with the new Alaskan oil tanker traffic, the existing traffic separation scheme in the Channel should be strengthened.

FINDING: At present, the Coast Guard has no means to monitor vessel traffic in the Channel other than intermittent overflights or other spot checks, and the extent of vessel compliance or non-compliance with the Traffic Separation Scheme is unknown.

RECOMMENDATION: As a first step, the Coast Guard should establish the capability to monitor all vessel traffic in the Point Conception-Point Fermin TSS on a continuous basis. Existing military radar facilities at Point Mugu and San Nicholas Island may be available for such use without jeopardizing their primary military purposes. In addition, the Coast Guard should establish a radio communications network, so that Coast Guard monitors can advise users of the TSS of potential hazards, and also communicate with vessels which, for whatever reason, stray from their proper lanes.

FINDING: ARCO, one company which carries crude oil from Port Valdez to California, has volunteered to run its tankers outside the Santa Barbara Channel. The use of routes outside the Channel, if undertaken on a selected and controlled basis, could yield useful information on the vessel safety and operational consequences of such routes.

RECOMMENDATION: The Coast Guard should undertake appropriate studies, in consultation with concerned Federal, State, and industry representatives, to identify optimum tanker routes in Southern California waters. As part of these studies, and after suitable preparation, the Coast Guard should consider conducting trials running selected tankers — in ballast, partly-loaded, and/or fully-loaded — outside the Channel. Such trials would aid in establishing the consequences of such routing in terms of vessel safety, operations and conflicts with other activities, and thus in determining what the optimum tanker routes off Southern California really are.

FINDING: In the Santa Barbara Channel, portions of 27 Federal oil and gas leases lie underneath the Point Conception-Point Fermin TSS. Should exploratory drilling rigs or production platforms be placed within or near the designated vessel traffic lanes, they could pose a substantial threat to the safety of vessels in the lanes.

RECOMMENDATION:

1. The Coast Guard and Army Corps of Engineers should promulgate special exploratory drilling regulations for the leased tracts in the Channel which lie within one mile of the Point Conception-Point Fermin TSS comparable to those issued for exploratory drilling in the Gulf of Santa Catalina TSS.

2. The Department of the Interior should withhold from upcoming OCS Lease Sale #48 all tracts which lie within or adjacent to the existing Point Conception-Point Fermin TSS.

FINDING: In 1976, the Coast Guard requested that the Army Corps of Engineers designate the Point Conception-Point Fermin TSS, including a ¼-mile buffer zone on the outside of each traffic lane, as a Safety Fairway. This action would not necessarily preclude exploration or development of these 27 leases, since they might be reached by slant drilling from outside the Safety Fairway, and it would reduce the threat to vessel safety. As of this writing, the Army Corps of Engineers has taken no action on the Coast Guard's request.

RECOMMENDATION: The Army Corps of Engineers should designate the Point Conception-Point Fermin traffic lanes, together with as wide a buffer zone on either side of each lane as the Coast Guard believes necessary to preserve an adequate vessel safety margin, as Safety Fairways.

GULF OF SANTA CATALINA TSS

Effective January 1, 1975, the Coast Guard established a traffic separation scheme in the Gulf of Santa Catalina along the southern approaches to the Ports of Los Angeles and Long Beach. The system consists of a traffic lane for north-bound ships, a traffic lane for south-bound ships, a separation zone between the lanes, and a precautionary area at the entrance to the two ports. This TSS has also been officially recognized by IMCO, and appears as recommended traffic routes on all navigation charts of this area produced by leading maritime nations.

Over the protests of the State of California and the Coast Guard, the Department of Interior, in December 1975, leased seven oil and gas tracts lying partially or entirely within the TSS, and one lease for a tract lying entirely within the precautionary area.

Prior to this lease sale, the Coast Guard requested that the Army Corps of Engineers (ACOE) designate the Gulf of Santa Catalina vessel traffic lanes and a 500-yard strip on both sides of each lane as a Safety Fairway. Within a Safety Fairway, the installation of permanent structures fixed to the seabed is prohibited. Thus, if commercial quantities of oil and/or gas were found in these tracts, the companies would not be able to install conventional production platforms within the Safety Fairway, but would have to either use seafloor production systems, or slant drill from conventional platforms located somewhere outside the Safety Fairway.

The ACOE took no action on the Coast Guard's request at that time, and stated its belief that the leased tracts within the TSS should be explored before the establishment of a Safety Fairway could be considered. The ACOE did, however,

recognize that the presence of exploratory drilling rigs within the TSS would constitute a potential threat to vessel safety, and consulted with the Coast Guard and Department of the Interior to devise a set of suitable conditions under which exploration could be carried out.

The following conditions were established:

(i) Exploratory vessels within a traffic lane will, to the degree practicable, be sited near traffic lane boundaries.

(ii) Exploratory vessels within one traffic lane, or in the precautionary area, shall be separated by at least 8 nautical miles in the direction of the lane axis.

(iii) Exploratory vessels located within the traffic lanes, or the precautionary area, shall not have their pendant bouys within 3,000 yards from the pendant bouys of any other vessel.

(iv) Exploratory rigs and vessels engaged in offshore development may have no cables, anchors, bouys or other associated equipment within the traffic lanes, ¼-mile buffer zones, or the precautionary area, at a depth of less than 100 feet, unless such equipment is marked with a Class 1 bouy or bouys in accordance with current Federal regulations.

Chevron and Shell have each conducted exploratory drilling on tracts lying within the TSS in compliance with these conditions. Shell has announced a commercial discovery on its tract, and is proceeding with development plans. In March, 1978, Shell applied to the ACOE for permits to install two production facilities in the separation zone, one of these being about seven-hundred yards from the north-bound traffic lane. Shell has indicated that complete development of its discovery will require a third platform, which can be located more than 500 meters from either vessel traffic lane.

In response to the ACOE request for comments on Shell's permit applications, the Coast Guard took the position that the permits should not be issued unless and until the ACOE designated the traffic lanes and a 500-meter strip on both sides of each traffic lane as a Safety Fairway. California took a similar position,

urging the ACOE to designate the traffic lanes and a ¼-nautical mile buffer zone on both sides of each traffic lane as a Safety Fairway.

On June 30, 1978, the Army Corps of Engineers issued a public notice proposing to establish each existing traffic lane together with a 500-meter buffer zone on both sides of each traffic lane as Safety Fairways, effective March 1, 1981. Until that date, exploratory drilling would be permitted within the lanes in accordance with the special rules previously adopted. After March 1, 1981, neither exploratory drilling nor the installation of permanent structures — such as production platforms — would be permitted within 500 meters of either lane.

FINDING:

1. The Tanker Task Force is concerned that the presence of surface structures within 500 meters of either traffic lane could pose a serious hazard to the safety of both the structures themselves and the vessels using the traffic lanes.

2. The presence of exploratory drilling rigs and production facilities within 500 meters of a vessel lane would constitute comparable hazards to safe navigation. However, exploratory drilling rigs would normally be on station for only 2 or 3 months, while the normal working lifetime of an offshore production platform is 15-25 years.

3. In view of the special regulations for exploratory drilling in the Gulf of Santa Catalina traffic lanes, the Task Force is prepared to accept a continuation of exploratory drilling on the seven leased tracts lying within the lanes until March 1, 1981, when the present exploration permits expire, and when the COE's proposed Safety Fairway would be established.

4. The Department of the Interior has scheduled another Southern California OCS lease sale for June, 1979. The leasing of additional tracts within the Gulf of Santa Catalina traffic lanes at this sale would greatly compound the existing vessel safety-petroleum development conflict. Moreover, the operators of such newly leased tracts would have less than two years to explore these leases before the effective date of the COE Safety Fairway proposal.

RECOMMENDATION:

1. The Tanker Task Force generally supports the ACOE proposal and recommends that the Gulf of Santa Catalina vessel traffic lanes, together with a 500-meter buffer zone on both sides of each lane, be designated as Safety Fairways at the earliest possible date.

2. The Department of the Interior should withhold from upcoming OCS Lease Sale #48 all tracts which lie within 500 meters of the existing Gulf of Santa Catalina vessel traffic lanes.

FINDING: One way to resolve the vessel safety-petroleum development conflict would be to relocate the existing TSS. Several years ago, it was proposed that the Gulf of Santa Catalina TSS be shifted four miles to the west of its present location, so that exploration and development of the existing leases could be conducted without hindering or being hindered by vessel traffic. The Coast Guard opposed this proposal, for two principal reasons: first, the traffic lanes in their present location reflect the historical and customary routes of ships approaching or leaving the Ports of Los Angeles and Long Beach; and second, shifting the traffic lanes to the west would force vessels to move through an area of high-density recreational traffic

between Santa Catalina Island and the mainland, thereby creating more conflicts than the shift would eliminate.

RECOMMENDATION: The Tanker Task Force opposes relocating the Gulf of Santa Catalina TSS at the present time. The Task Force might support such a move in the future, if a substantial discovery were made on one of the existing leases within the present traffic lanes which could not be exploited except from surface structures within one of the present lanes. Should such a situation arise, an ad-hoc committee comprising appropriate Federal, State, oil industry, and shipping representatives should be convened to identify alternate TSS locations which provide adequate vessel safety margins and also avoid additional user conflicts.

FINDING: One OCS tract has already been leased within the precautionary area at the entrance to the Ports of Los Angeles and Long Beach. Vessel traffic density is greater in this area -- and maneuvering room is less -- than in either of the two sets of traffic lanes leading to it. All ships entering or leaving the two ports must travel through this precautionary area. Hence, the presence of fixed structures in this precautionary area would constitute a greater hazard to navigation than would the presence of fixed structures within or near the traffic lanes themselves.

RECOMMENDATION:

1. The Department of the Interior should not offer any tracts lying in the precautionary area for sale in upcoming OCS Lease Sale #48.

2. The Coast Guard and the ACOE should conduct a joint study to determine whether any scheme can be devised which would allow exploratory drilling or production within the existing precautionary area without posing an unacceptable hazard to navigation.

3. The ACOE should not issue any permits for the installation of fixed structures within the existing precautionary area unless and until such a study is undertaken which finds that such activity can be carried out with an acceptable margin of vessel safety.

4. If this study finds that there is a portion of the precautionary area within which oil exploration and/or production could be permitted while maintaining an acceptable margin of vessel safety, it should identify the area, and the conditions under which such activities could be allowed, and the ACOE should designate the remainder of the precautionary area as a Safety Fairway.

5. If this study finds that there are no circumstances under which expolration or production activities could be carried out in the precautionary zone with an acceptable margin of vessel safety, the Department of the Interior should consider cancelling the existing lease in the precautionary area and refunding the $12.4 million bonus paid for the lease, and the ACOE should designate the entire precautionary area as a Safety Fairway.

SECTION D: AIR POLLUTION

Ships generate air pollutants, primarily sulfur dioxide (SO_2), oxides of nitrogen (NO_x), and particulate matter, from the combustion processes which provide the ships with power. These pollutants contribute to the substantial air quality problems of California's coastal urban areas, particularly where ports and harbors adjoin urban areas. The Air Resources Board is now conducting studies in an effort to develop regulations which will reduce ship contributions to California's air quality problems.

FINDING: One way to reduce sulfur dioxide emissions is to require ships to burn low-sulfur fuel (less than 0.5 percent sulfur by weight) while in waters near the California coast. To do this, and to provide a means of verifying compliance, may require that special modifications be made to a ship's fuel system. Burning low-sulfur fuel may be impractical in some cases, as many ships calling at California ports come from ports where low-sulfur fuel is not readily available. In addition, the expense of fuel system modifications might be an undue hardship for ships with irregular schedules or routes involving only rare or occasional calls at California ports. On the other hand, many tankers move on fixed routes between or among specific ports with regular calls at California ports. Permit conditions for the SOHIO Alaskan oil terminal in Long Beach require that all tankers calling there burn low-sulfur fuel while in California coastal waters.

RECOMMENDATION: The ARB should consider adopting a rule requiring all vessels moving on fixed routes involving California ports, such as the tankers carrying Alaskan oil and the tankers which shuttle between California terminals, or between lightered tankers and terminals, to burn only low-sulfur fuel while in California coastal waters.

FINDING: Ships in San Francisco Bay are required to comply with a smoke opacity standard imposed by the Bay Area APCD. Spokesmen for shipping interests complain that this standard was originally developed for application to stationary sources on shore, and that it is physically impossible for ships to comply with this standard at all times.

RECOMMENDATION: The ARB and the Bay Area APCD should investigate this complaint. If it is found to have merit, they should work together to devise

a new rule which reduces total ship smoke emissions to an acceptable minimum which is capable of being met by ships in the Bay.

An air pollution problem shared by all vessels which carry petroleum in bulk is the reactive hydrocarbon varpors generated in petroleum cargo tanks. If not otherwise controlled, these hydrocarbon vapors are released or displaced into the atmosphere when a tanker loads petroleum into its cargo tanks, takes on nonsegregated ballast in uncleaned cargo tanks, or purges or inerts uncleaned tanks. The emission of reactive hydrocarbons can also take place when cargo tanks are gas-freed. Tankers purge cargo tanks by flushing them with inert gases. This action reduces the concentration of both hydrocarbon vapors and oxygen within the tank, thereby reducing the risk of explosion. Gas-freeing — the flushing of cargo tanks with air — is done to provide an atmosphere sufficiently free of toxic gases that crew members can safely enter the tanks to perform specific tasks. Gas-freeing is also undertaken to reduce the concentration of explosive gases in cargo tanks so as to provide greater safety margins.

The Air Resources Board considers reactive hydrocarbons — which are precursors to photochemical smog formation — such serious air pollutants that it is developing a rule which, if adopted, would prohibit tankers from purging or gas-freeing their tanks within a designated portion of the waters off California. Tankers would be free to purge or gas-free outside this area, since emissions would not generally be transported to the California coast.

Reactive hydrocarbons are also emitted whenever a tanker loads petroleum into its cargo tanks, whether this loading occurs at a petroleum terminal or during lightering operations, either in port or on the high seas. The ARB is drafting proposed model rules which would substantially reduce permissible hydrocarbon

emissions from tankers loading within a designated portion of the waters off California.

FINDING: Under these rules, operators could employ either a vapor-balance system, in which vapors emitted by the receiving tanker would be recycled back into the now-empty cargo spaces of the loading tanker or facility, or a vapor recovery system (VRS) involving refrigeration-condensation and/or incineration of the hydrocarbon vapors. Of course, tanker operators involved in lightering would also have the option of conducting their operations outside the designated waters off California.

RECOMMENDATION: The Tanker Task Force supports the ARB's efforts, and urges the ARB to take whatever steps are needed to reduce tanker hydrocarbon emissions to acceptable levels.

SECTION E: TANKER INSPECTIONS AND EXAMINATIONS

UNITED STATES FLAG TANKERS

United States-flag tankers cannot lawfully operate without a valid certificate of inspection from the Coast Guard. No tanker can obtain insurance unless it holds a valid classification certificate and a seaworthiness certificate from a recognized ship classification society. Congress has authorized the American Bureau of Shipping (ABS) to issue classification and seaworthiness certificates for United States-flag vessels, including tankers. There are 15 recognized ship classification societies in the world, but 95 percent of world tanker tonnage is classified by three — ABS, Lloyd's Register (British), and Det Norske Veritas (Norwegian).

When a new United States-flag tanker is proposed to be built, the Coast

Guard and the ABS jointly review the design specifications and plans prior to the start of construction, witness tests during construction, and inspect the tanker after construction. If the tanker meets all requirements, it receives the necessary certificates from the Coast Guard and ABS, and commences trading. The Coast Guard certificate of inspection is valid for two years. At some point between 10 and 14 months after the certificate has been issued, the Coast Guard conducts a mid-period examination covering everything except the aspects of a tanker's hull and structural integrity which cannot be inspected while the tanker is in the water. Because salt water corrodes ship plating, the Coast Guard requires that a ship which has been in salt water for more than twelve months during the previous two years be hauled out at a drydock and subjected to a thorough hull inspection before its certificate of inspection can be renewed.

FOREIGN-FLAG TANKERS

In the past, foreign-flag tankers with valid certificates of inspection, classification, and seaworthiness, and also valid certificates of compliance with applicable international vessel safety requirements, have been largely exempt from examination or inspection by the Coast Guard. The Coast Guard would examine only those vessels which suffered a casualty in United States waters or were reported to the Coast Guard — by crew members or other persons — to be unseaworthy or overloaded.

After the Sansinena explosion in Los Angeles harbor in December, 1976, the Coast Guard initiated a program to examine all foreign-flag tankers entering United States waters, with special attention paid to the cargo venting, handling, and transfer equipment. Following President Carter's message on March 17, 1977, this program was expanded to include an examination of every foreign-flag tanker

entering United States waters to determine compliance with all safety and pollution standards currently applicable to foreign-flag tankers under both domestic regulations (primarily 33 CFR, Part 155) and international agreements. The Coast Guard's current policy is to examine all foreign-flag tankers except those which have been examined within the previous 90 days and found to be free of deficiencies. As of December 31, 1977, the Coast Guard had conducted 2,710 examinations of 1,320 tankers. Deficiencies of one sort or another were found during 1,458 (53.8 percent) of these examinations, two tankers were denied entry, and ten tankers were detained until necessary repairs had been completed.

To assist Coast Guard personnel in their tanker boardings and examinations, the Coast Guard is now developing a Marine Safety Information System (MSIS) based on computer storage and retrieval of pollution and casualty data and the records of previous boardings and examinations. When this system is fully operational, it should be capable of providing this information to Coast Guard personnel on a timely basis.

Ships must report all casualties to their classification society, and a ship's seaworthiness and classification certificates are suspended after a casualty until the classification society is satisfied that the necessary repairs have been properly carried out. Ship casualty records are held in confidence by the classification society, and are not released to the Coast Guard or anyone else without the owner's permission.

United States-flag ships are required to report casualties sustained anywhere in the world to the Coast Guard. Foreign-flag ships are required to report to the Coast Guard casualties sustained in United States waters. In addition, the Coast Guard maintains records of all oil discharges in United States waters, either

reported to the Coast Guard — as required by law — or discovered by Coast Guard personnel.

FINDING: Shortcomings exist in the Coast Guard's pollution and casualty record-keeping for both United States-flag and foreign-flag tankers. With regard to United States-flag tankers, the Coast Guard does not now have access to the casualty records maintained by the ABS. The Coast Guard can purchase some of this information, but even this purchased information is presented by the ABS in such a fashion that an individual United States-flag tanker's casualty record cannot be determined. With regard to foreign-flag vessels, the Coast Guard does not now compile or maintain records on the casualties or pollution incidents involving such vessels outside of United States waters.

RECOMMENDATION:

1. The Coast Guard should expand its casualty records to include casualties sustained by foreign-flag tankers outside United States waters. Much of this information could be obtained by the Coast Guard, either from private commercial organizations, or from Lloyd's List, a newspaper published by Lloyd's of London.

2. Congress should require the American Bureau of Shipping to provide the Coast Guard with the complete casualty records it maintains for each United States-flag tanker.

3. The Coast Guard should compile casualty and oil spill statistics comparing the performance of tankers with such features as double hulls, double bottoms and protectively-located segregated ballast with those lacking such features, and publish the results on an annual basis.

EMERGENCY TUG ASSISTANCE

FINDING: One issue raised by the Amoco Cadiz disaster is the availability of tugs or other vessels to assist disabled tankers off California's coast. Ocean-going tugs are available in the Bay Area and the Ports of Long Beach and Los Angeles. In addition, Navy tugs are stationed in Port Hueneme and San Diego. Coast Guard vessels and also supply boats serving offshore drilling rigs and production platforms might also be pressed into service during emergencies. The Bay Area and the coast south of Point Conception thus appear to be adequately covered, but the central and northern California coast may not be.

RECOMMENDATION:

1. The Coast Guard should conduct a study to identify vessels capable of assisting distressed tankers off the central and northern California coast, and should take whatever steps are needed to ensure that these vessels can be located and dispatched promptly in an emergency.

2. The Coast Guard should study customary tanker traffic routes along the California coast north of Point Conception, and should consider designating new routes farther offshore in order to increase the time during which assistance could be provided to a tanker in distress before the tanker reaches shore.

TUG ASSISTANCE REQUIREMENTS

FINDING: At the present time, the tug assistance requirements for a tanker entering or leaving port are determined by the master and pilot. In 1976, the Coast Guard published an advance notice of purposed rule-making regarding the possible establishment of minimum tug assistance requirements, which

would be set for each port on the basis of port characteristics, vessel characteristics, type of cargo, and other factors. To date, the Coast Guard has taken no further action.

RECOMMENDATION: The Task Force supports the concept of setting minimum tug assistance requirements, and urges the Coast Guard to complete its studies and establish minimum tug assistance requirements for tankers.

PROVIDE "REPORT CARDS" TO PROSPECTIVE CHARTER

FINDING: In 1973, the Interstate Commerce Commission imposed a requirement that all interstate movers provide in advance to prospective consumers a record of their past performance with regard to the accuracy of estimates, customer claims, lateness, and other performance standards. If, in similar fashion, tanker owners or operators were required to provide charterers in advance with a complete record of a vessel's record of casualties, oil discharges, and ownership changes, this would provide an incentive for improved tanker performance, and (especially in view of the present substantial surplus of available foreign-flag tankers) would help tanker charterers to avoid tankers with the poorest performance records. Several major oil companies maintain such records, but are reluctant to share these records with other companies out of a professed fear of violation of United States anti-trust laws.

RECOMMENDATION:

1. Congress should consider enacting legislation requiring that before any charter agreement is executed under which a tanker would enter a United States port, that the prospective charterer be provided with a complete record of the tanker's casualty, oil discharge, and change of ownership records.

2. Congress should request an opinion from the Attorney General on whether the sharing of tanker casualty and performance information by American corporations would violate any Federal law.

3. If the Attorney General determines that such sharing of information would violate Federal law, Congress should consider enacting legislation permitting American tanker charterers to share information on the performance and characteristics of tankers available for charter.

TANKER TOTAL LOSSES

FINDING: Table 1 presents data on world-wide tanker total losses during the period 1964-1977. At least 50% of the tankers in every category of casualty resulting in a total loss during this period were 10 years old or more. Special steps ought to be taken to provide a greater margin of safety for such tankers.

Table 1: TANKER TOTAL LOSSES 1964-1977 OF 6,000 DWT & OVER
(Includes Actual and Constructive Total Losses)

Associated:			Types of Casualties		Losses	
	Oil Spills			Total	10 Yrs. of Age & Over	
Deaths	Number	Size (Tons)		Losses Number	Number	Percentage
308	23	507,000	Structural Failure	36	36	100
87	9	90,000	Engine-Room Fire/Explosion	32	31	97
1	10	263,000	Engine-Room Flooding	13	12	92
-	1	?	Engine Trouble, etc.	9	8	89
32	17	478,000	Stranding/Grounding	48	38	79
249	10	135,000	Other Fire/Explosion	26	19	73
227	13	196,000	Collision	26	15	58
160	8	22,000	Cargo Tank Fire/Explosion	26	14	54
51	4	86,000	Ramming	4	2	50
1,115	95	1,777,000		220	175	80%

(Source: Arthur McKenzie, Tanker Advisory Center, New York City.)

RECOMMENDATION: Congress should require all U.S.-flag tankers to undergo a special structural inspection when they reach 10 years of age, and should consider establishing tougher structural standards for such tankers.

FINDING: In 1968, a 1966 IMCO load-line convention which increased the amount of petroleum tankers were permitted to carry — beyond what had previously been considered safe — entered into force. The conversion to deeper load-lines was completed in mid-1968. Since 1968, the number of tanker total losses due to structural failure has increased substantially (Table 2). This increase may be related to the load-line change.

Table 2: TANKER TOTAL LOSSES DUE TO HULL FAILURE

Period	#	dwt	Average #/Year	Average Loss/Year (dwt)
1964-1968 (5 years)	5	127,000	1	25
1969-1973 (5 years)	10	236,000	2	47
1974-June 1977 (3½ years)	9	410,000	2½	117

(Source: Arthur McKenzie, Tanker Advisory Center, New York City)

RECOMMENDATION:

1. Congress should consider enacting load-line legislation reducing the amount of petroleum U.S.-flag tankers 10 years of age and over are permitted to carry.

2. The United States should ask IMCO to consider repealing the 1966 load-line convention, and the United States should consider renouncing that convention and imposing safer load-line requirements unilaterally on all tankers wishing to enter U.S. ports.

II. Terminal and Port Operations

SECTION A: MARINE PETROLEUM TERMINALS

INTRODUCTION

There are 59 marine petroleum terminals (hereafter referred to as "petroleum terminals" or "terminals") in California, through which more than 2,500,000 barrels of crude oil and petroleum products are transferred each day. Crude oil accounts for slightly more than half of this total. Thirty-five of these terminals are located on lands which have been granted by the State to local authorities. The other 24 are situated on non-granted State lands, and are operated by private companies through lease agreements with the State Lands Commission. The volume transferred at terminals on granted lands is roughly the same as the volume transferred at terminals on non-granted lands.

Under existing Federal law, the Coast Guard and the Environmental Protection Agency share responsibility for drawing up and enforcing Federal safety standards and pollution prevention regulations for petroleum terminals. Through a memorandum of understanding, the Coast Guard and EPA have divided this responsibility, with the Coast Guard regulating transportation-related facilities and operations at each terminal (such as the tankers and tank barges, docks, hoses, pipelines, transfer procedures, etc.), and EPA regulating the non-transportation-related facilities (e.g. storage tanks).

The Coast Guard conducts annual inspections of petroleum terminals, and requires the operator of each terminal to submit an operations manual describing,

among other things, the terminal's layout and equipment, transfer procedures, and a contingency plan for reporting and cleaning up oil spills. EPA requires a Spill Prevention, Control, and Countermeasures plan. Before a transfer begins, Coast Guard regulations require that the persons in charge of transfer operations on both the vessel and the facility — or other vessel in the case of lightering or bunkering operations — hold a pre-transfer conference to review and agree upon the particulars of the transfer operation, as well as the procedures to employ in the event of an oil spill or other emergency.

SOHIO PROJECT

On October 19, 1977, the California Coastal Commission granted a permit to the Port of Long Beach for construction of the proposed Sohio petroleum terminal. The permit provides for the construction of three deep-draft tanker berths and related facilities capable of receiving 500,000 barrels of Alaskan North Slope crude oil for trans-shipment to Texas and other markets east of the Rocky Mountains. California will bear most of the adverse environmental effects of the project, while interior states will receive most of the oil and associated economic benefits.

The Sohio project was the first major energy project with broad national implications to be considered under the Coastal Act of 1976. In approving the project, the Coastal Commission fully considered the national interest involved in the use of California's coastal zone for energy-related purposes. In order to minimize adverse project impacts, the Coastal Commission issued the permit with a series of conditions.

FINDING: One of the conditions requires the preparation of a Terminal Operations Plan including: 1) contingency plans for

catastrophic occurrences such as explosions, fires, and earthquakes; 2) oil spill contingency plans; 3) provisions for qualified pilots, crew, and terminal personnel, tug assistance, and adequate communications; 4) oil spill containment and recovery equipment; 5) testing of equipment and personnel; and 6) coordination with oil spill cooperatives in California. Other conditions provide for State inspector access to the terminal facilities, inert gas systems on vessels calling at the facility, and operation as a common carrier facility.

Other State agencies are considering conditions which would minimize the emission of air pollutants from tanker operations and other pollution sources associated with the project. The Port of Long Beach is also considering lease conditions which would reinforce many of the conditions either imposed or under consideration by State agencies.

RECOMMENDATION: The permit conditions and stipulations attached to the Sohio permit by the State Coastal Commission should be used as a model by other State and local agencies reviewing and issuing permits for petroleum-related development projects in California.

TRANSFER MONITORING

In 1972, the Coast Guard conducted a pilot program in Puget Sound in which all bulk transfer operations during a six-month period were monitored by Coast Guard personnel. During this period, there was a 60% reduction in the number of transfer-related oil spills. These results indicate that the monitoring of

oil transfer operations by persons not affiliated with the companies involved in the transfers can aid in the prevention of oil spills at petroleum terminals.

FINDING: The Coast Guard has adopted a "mission performance standard" of monitoring 25% of all liquid bulk transfer operations, including bunkering, which involve oil or other hazardous substances on vessels with tank capacity exceeding 250 barrels. In the 12th Coast Guard District, which includes all of the California coast north of Santa Barbara County, approximately 33% of all transfer operations were monitored during 1977, according to Coast Guard officials, while in the 11th Coast Guard District, which runs from Santa Barbara County south to the Mexican border, the percentage of transfer operations monitored during 1977 was 30%. On a nationwide basis, however, the Coast Guard has stated in Congressional testimony that it has been able to monitor only 12% of such transfer operations.

RECOMMENDATION: Congress should provide the Coast Guard with additional funds and personnel to conduct its transfer monitoring program. The Coast Guard should place special emphasis on the monitoring of transfer operations involving vessels or terminals with records of previous spills.

STATE TERMINAL REQUIREMENTS

Section 102(b) of the Ports and Waterways Safety Act provides State and local governments with the authority to set higher safety equipment requirements and safety standards for structures such as petroleum terminals than those set by Federal agencies. In the past, State and local authorities have generally

been content to rely upon Federal terminal standards and requirements.

In recent years, though, State agencies in California have become concerned that these Federal regulations are not as effective as they ought to be in achieving safe, pollution-free terminal operations. Reflecting this concern, agencies with permit authority over petroleum terminal operations, primarily the Coastal Commission, the State Lands Commission, and the Bay Conservation and Development Commission, have begun attaching conditions to terminal permits which impose new or more stringent State requirements on terminal operators. These conditions have included requirements for terminal operations plans, periodic inspections by qualified State personnel, oil spill contingency plans, and periodic demonstrations of oil spill response procedures.

FINDING: Problems are arising because different State agencies are attaching conditions to their permits for a given terminal which call for the same or similar actions by the terminal operator. As a rule, the permit-issuing agency will reserve to itself the right to review and determine the adequacy or inadequacy of a terminal operator's actions in response to its permit conditions. In the absence of specific agency criteria and inter-agency coordination regarding review and judgement of an operator's actions, there is clear potential for confusion and duplicated effort on the part of both permit-issuing agencies and permit applicants.

RECOMMENDATION:

1. The Coastal Commission, BCDC, and the State Lands Commission should devise procedures for coordinating their permit conditions and review criteria to ensure that necessary conditions are imposed

with minimum duplication.

2. As part of this effort, these agencies should jointly prepare a model terminal operations manual to guide terminal operators in developing acceptable terminal operations plans.

3. With the assistance of the Department of Fish and Game, these agencies should jointly prepare a model oil spill contingency plan to guide terminal operators in developing acceptable oil spill contingency plans.

STATE LANDS COMMISSION TERMINAL REGULATIONS

FINDING: The State Lands Commission has issued proposed regulations for terminals located on State lands. The proposed regulations would require terminal operators to develop and submit for approval a terminal operations manual, to undergo periodic inspections by State Lands Commission staff, to develop contingency plans for fires, explosions, earthquakes, oil spills, and other emergencies, to provide levels of financial responsibility varying according to the specific characteristics of each terminal and the tankers calling at each terminal, and to take other actions.

RECOMMENDATION:

1. The Tanker Task Force supports the State Lands Commission's proposed actions, and urges the Commission to adopt final rules which will improve the performance of marine petroleum terminals located on State lands with regard to both safety and pollution abatement.

2. The Commission should, to the extent possible, seek to

establish minimum standards which can be applied uniformly to all petroleum terminals in the State, while retaining the flexibility to waive certain requirements or to impose additional requirements as called for by the unique and different characteristics of individual terminals.

3. To ensure compliance with its regulations, the Commission should move to acquire personnel with the appropriate qualifications and training to review terminal operations manuals, to monitor terminal operations, to inspect terminal facilities, and to perform other related actions.

FINDING: As noted earlier, 35 petroleum terminals are located on lands which have been granted by the State to local authorities at different times and for different purposes. The State Lands Commission has jurisdiction over petroleum terminal operations on non-granted lands, but considerable uncertainty exists as to the nature and extent of jurisdiction retained by the Commission with regard to petroleum terminals on granted lands.

RECOMMENDATION:

1. The Commission should request an opinion from the Attorney General regarding the extent of jurisdiction possessed by the Commission over petroleum terminals on granted lands for purposes of establishing and enforcing uniform state-wide regulations.

2. If the Attorney General determines that the Commission does possess such jurisdiction over petroleum terminals on granted lands, the Commission should issue final regulations uniformly applicable to all petroleum terminals, whether on granted or

non-granted lands.

3. If the Attorney General determines that the Commission does not possess such jurisdiction over petroleum terminals on granted lands, the Commission should petition the Legislature to provide the Commission with the necessary jurisdiction. In the interim, the Commission should issue final regulations uniformly applicable to all petroleum terminals on non-granted lands, and State agencies with permit, regulatory or other authority over terminals on granted lands should consider imposing comparable special requirements when issuing permits to terminals located on granted lands.

TERMINAL OIL SPILL CONTAINMENT EQUIPMENT

FINDING: Present Coast Guard regulations require that all oil tranfer facilities have "ready access" to oil spill containment equipment, and define "access" to mean direct ownership, joint ownership, cooperative venture, or contractual agreement. Some terminal operators store and maintain oil spill containment boom at the facility, though this is not now required. Other terminal operators have no equipment at the facility itself, and have arranged for booms and other spill response equipment to be delivered to the terminal in the event of a spill. This practice can build unnecessary delay into spill response, and may unnecessarily reduce the effectiveness of containment and recovery efforts.

RECOMMENDATION:

1. The State Lands Commission in its regulations, and the Coastal Commission and BCDC in their permit actions, should require all

terminals located along the coast to store and maintain at each facility sufficient boom to surround the largest vessel which could reasonably be expected to call at the terminal.

2. For offshore terminals, such an on-site boom storage requirement is probably impractical. Instead, the State Lands Commission in its regulations, and the Coastal Commission and BCDC in their permit actions, should require that each offshore terminal operator arrange for a dedicated vessel, carrying adequate boom and personnel trained in deploying the boom, to be present on-scene throughout each transfer operation.

OIL SPILL PREVENTION

FINDING: In 1976, the S.S. Hawaiian, a bulk carrier for the Matson Line, was involved in two oil spills in the San Francisco Bay Area--one in Oakland Harbor and one in the Carquinez Straits. Both spills occurred while the ship was loading oil, and both happened because the cargo tanks were permitted to overflow. The Attorney General filed suits, and obtained a negotiated settlement under which Matson will take special precautions during future operations.

For transfers anywhere in the Bay Area except in the Carquinez Straits, Matson will hire an independent pollution consultant to supervise and monitor all transfer operations, and will surround the receiving vessel with oil spill containment boom. In the Carquinez Straits, which have valuable marshes at each end, and where currents are often too fast for booms to contain spilled oil effectively, Matson will have the independent supervisor/monitor present at all transfers, and will have

booms and skimming devices on a work boat standing by on-scene in hopes of diverting and collecting oil in the event of another spill.

RECOMMENDATION: State agencies with permit, regulatory, or other authority over terminal operations should consider imposing comparable special requirements on terminals which experience repeated oil spills.

FINDING: Bills have been introduced in the California Legislature which would make it unlawful to transfer oil or other hazardous substances between a vessel and a shore facility or another vessel through a pipeline unless the flow is continuously monitored by a mechanism which will warn of the imminent occurrence of an overflow so that the flow can be shut down in time to avert the overflow.

RECOMMENDATION:

1. The Task Force supports the concept embodied in these bills, and urges the Legislature to enact such a provision into law.
2. The Coast Guard should consider imposing a comparable requirement on a national basis.

TRAINING OF TERMINAL PERSONNEL

FINDING: Existing Coast Guard regulations require that the person in charge of oil transfer operations at a petroleum terminal have at least 48 hours of experience in oil transfer operations, and that this person be familiar with the terminal operating procedures, control systems, contingency plans, and Coast Guard regulations applicable to oil transfer operations. However, there is no experience or training requirement

for any other members of the terminal crew engaged in a transfer operation. Some terminal operators voluntarily provide training for such personnel, while other operators do not. Minimum training standards should be set for all workers directly involved in transfer operations, because any of them may be in a position to cause or prevent oil spills, fires, explosions, or other accidents.

RECOMMENDATION: The Legislature should conduct hearings and solicit testimony from terminal operators, labor union representatives, and other interested parties regarding the need to establish minimum training standards and programs for terminal employees engaged in transfer operations, including the designated person in charge.

SECTION B: IN-PORT LIGHTERING

Section 8574.5 of California's Government Code provides the Department of Fish and Game with the authority to impose oil spill preparedness requirements on any vessels engaged in lightering off the California Coast, including bays and estuaries. The Department of Fish and Game has used this authority to require that a dedicated vessel with oil spill cleanup equipment and personnel stand by on-scene during all lightering operations conducted in the vicinity of San Clemente Island, but has not imposed any requirements on lightering activities conducted within California ports, harbors, or bays.

Such in-port lightering regularly occurs in San Francisco Bay, and Los Angeles and Long Beach Harbors, and has increased in frequency and volume since August, 1977, when Alaskan North Slope crude oil began arriving in California ports in comparatively large tankers.

FINDING: In July, 1977, the City of Long Beach Fire Department established a requirement that all vessels engaged in lightering operations within city limits (which includes all of Long Beach Harbor) be surrounded by oil spill containment booms throughout the lightering operation. The Coast Guard requires that a dedicated vessel with oil spill response equipment and personnel stand by on-scene during all lightering operations in San Francisco Bay.

RECOMMENDATION:

1. With reference to Los Angeles and Long Beach harbors, the Department of Fish and Game should convene a meeting with representatives of port and other interested local authorities, the Coastal Commission, the Coast Guard, and Clean Coastal Waters, Inc. (an industry oil spill cleanup cooperative association) to discuss what, if any, additional procedures may be needed to ensure prompt response to spills occurring during lightering operations in Los Angeles and Long Beach harbors.

2. With reference to San Francisco Bay, the Department of Fish and Game should convene a meeting with representatives of port and other interested local authorities, the Bay Conservation and Development Commission, the Coast Guard, and Clean Bay, Inc. (an industry oil spill cleanup cooperative) to discuss what, if any, additional procedures may be needed to ensure prompt response to spills occurring during lightering operations in San Francisco Bay.

SECTION C: PILOTAGE

For pilotage purposes, tankers calling at California ports fall into three

general categories: tankers, whether U.S.-flag or foreign-flag, engaged in foreign trade; U.S.-flag tankers engaged in domestic trade; and military tankers or civilian tankers under charter to any branch of the U.S. armed forces. Federal law prohibits States from imposing pilotage requirements on domestic shipping. Furthermore, tankers carrying oil for any branch of the U.S. military services — whether these tankers are owned outright by the military forces or whether they are civilian tankers under military charter — are exempt from State pilotage requirements. Hence, California's jurisdiction over tankers — or any other vessels — for purposes of establishing pilotage requirements is restricted to vessels engaged in foreign trade, and does not extend either to tankers engaged in domestic trade (such as those delivering Alaskan oil to California), or to tankers carrying oil for the military (such as the Sealift China Sea).

FINDING: Except in San Francisco Bay, there is no State requirement that vessels entering or leaving California ports employ the services of a licensed pilot. Many local port authorities have adopted such a requirement, but some have not. Without exception, there is no State requirement for pilotage of vessels moving from one point to another within a California port.

RECOMMENDATION: The California Legislature should enact legislation requiring licensed pilots for all vessels engaged in foreign trade moving into, within, or out of California ports.

FINDING: There are no state-wide standards or written job qualification requirements for State pilots in California. With the exception of a portion of the San Francisco Bay Area, local authorities are free to set their own pilotage job qualification standards

or requirements.

In most California ports, pilots are employed on the basis of a Coast Guard pilot's license, with a pilotage endorsement for the area of employment. With the exception of Los Angeles and Long Beach, this is not a written requirement. In Humboldt Bay, there are apparently no pilotage requirements or pilot qualification standards of any kind, and the pilots there establish their own rules and set their own fees.

RECOMMENDATION: The Legislature should enact legislation requiring possession and maintenance of a Federal pilot's endorsement for the area of employment as a condition of employment for pilots in California. This would serve two useful purposes. First, it would ensure that all State-licensed pilots meet Federal pilotage experience and training standards. Second, it may enable the Coast Guard to take disciplinary action against State-licensed pilots where the facts in a given incident warrant such action.

FINDING: Pilots use radios to communicate with and issue orders to tugboat operators in the course of their pilotage. This pilot-tugboat operator radio communication link is occasionally blanked out during periods of heavy radio traffic by other users. If such a blank-out were to occur during a critical manuever, a serious accident could result. On the East Coast, the FCC has reserved one channel for the exclusive use of pilots. This system appears to work very successfully. No such action has been taken on the West Coast, but the Federal Communications Commission has indicated in a Notice of Rule-

making that priority action is being taken to reserve radio frequency 156.85 MHz for exclusive use by pilots.

RECOMMENDATION: The California Legislature should adopt a resolution supporting this proposed Federal Communications Commission action, and urging the FCC to monitor this channel carefully to minimize use by unauthorized persons.

FINDING: Lack of qualified pilots is not now a problem at any specific California port, but may become a problem in the future. Several California ports have active apprentice pilot programs. The Jacobsen Pilotage Company, which provides pilotage for the Port of Long Beach under contract, actively recruits individuals with appropriate maritime backgrounds, and trains these individuals for eighteen months. Upon successful completion of this program, these apprentice pilots may become full pilots if voted in by the existing pilots. The Red Stack Tugboat Company, based in San Francisco, has a similar pilot training program.

RECOMMENDATION: The major California ports should consider establishing apprentice or trainee pilot programs comparable to the programs conducted by the Jacobsen Pilotage Company on behalf of the Port of Long Beach, or that of the Red Stack Tugboat Company.

FINDING: Under present Coast Guard and State procedures, one pilot license qualifies an individual to pilot any tanker. Tankers now calling or soon to be calling at California ports range in size from 15,000 to more than 188,000 deadweight tons, and exhibit vastly

interior pilots under the same licensing requirements set for San Francisco Bar Pilots.

SECTION E: PORT PLANNING

The amount of oil and other commodities shipped through California ports is increasing, and is likely to continue increasing in the future. There is a great need for coordinated planning for future port development and operations in California. In the Bay Area, and in the Los Angeles/Long Beach region, where several competing ports are located in close proximity to each other, it is important that planning and policy development take place within a regional framework.

In the Bay Area, the Metropolitan Transportation Commission and the Bay Conservation and Development Commission have formed a Seaport Planning Advisory Committee to assist in the development of the Maritime Element of MTC's Regional Transportation Plan and the update of the port policies of BCDC's Bay Plan.

FINDING: There is no comparable regional policy development and coordination body in the Los Angeles/Long Beach region. With respect to crude oil transportation planning and policies, such a regional body may be needed to ensure that public interests at the local, regional, state, and national level are well-served.

Chapter 8 of the Coastal Act of 1976 requires the ports of Long Beach, Los Angeles, Port Huenume, and San Diego to develop and submit master port plans for certification by the Coastal Commission. In its review of these master plans, the Coastal Commission can encourage such regional policy coordination between the ports of

Long Beach and Los Angeles, but this is at best an interim solution.

RECOMMENDATION: The Senate Select Committee on the Maritime Industry should hold hearings on the subject of establishing a suitable port policy coordinating body for the Los Angeles/Long Beach region.

SECTION F: RISK MANAGEMENT

The hazards associated with the handling, transfer, and storage of toxic, flammable, or explosive materials in U.S. ports have received increased attention in recent years. Facilities handling such materials are generally required to prepare contingency plans for response to catastrophes such as fires, explosions, earthquakes, etc. However, the potential scope of a major disaster could exceed the resources available to individual facility operators for response to such an event. With regard to massive oil spills, industry cooperative associations have been established in most major California ports to share spill response equipment. Other potential disasters have received less attention.

As part of the port master plans being developed pursuant to the Coastal Act of 1976, the ports of Long Beach and Los Angeles have initiated risk management programs, consisting of three phases: an inventory of existing hazards; an assessment of the degree of risk associated with each hazard; and development of prevention and mitigation strategies. Each port has begun work on the first phase, with funding provided by the Coastal Commission through the Coastal Energy Impact Program.

At the Federal level, the Coast Guard is in the process of revising its waterfront facility regulations, and will address risk management issues in the final

regulations. Legislation has been introduced in Congress which would make additional Federal funds available for risk management studies.

RECOMMENDATION: The Task Force agrees that port safety and risk management issues warrant further study and actions on a priority basis. Such actions as may need to be taken as a result of these studies will require substantial coordination among local, State, Federal, and industry representatives. As the State level, the Coastal Commission should be the lead agency, in cooperation with BCDC, SLC, Office of Emergency Services, and other concerned State agencies.

III. Oil Spill Cleanup and Liability

California has never experienced an oil spill on the scale of the Argo Merchant, Amoco Cadiz, or Torrey Canyon disasters. The largest tanker-related spills in California waters to date have been the 1971 Oregon Standard-Arizona Standard collision underneath the Golden Gate Bridge and the 1976 Sansinena explosion in Los Angeles Harbor, each of which resulted in oil spills of about 20,000 barrels. The largest recorded oil spill from any source in California is the 1969 Santa Barbara Channel blowout, which was estimated by Federal officials to involve 77,000 barrels.

Tankers operate along virtually all of California's 1,000-mile coastline. A major tanker oil spill could occur at any time, and the potential size of such a spill is enormous. The Santa Barbara Channel blowout released less oil than is carried in a T-2 tanker, one of the smallest classes of tankers in service off California. Tankers now being built for the Port Valdez-California trade are as large as 188,000 deadweight tons. Should one of these fully-loaded tankers break up off California and release all of its cargo, the resulting spill would be more than 15 times larger than the 1969 blowout.

SECTION A: OIL SPILL CONTINGENCY PLANS

After the Torrey Canyon oil spill off England in 1967, the President of the United States directed the Secretaries of Interior and Transportation to determine the best means of protecting the natural resources of the nation from oil or other hazardous material spills. Subsequent Federal legislation and administrative action created the "National Oil and Hazardous Substances Pollution Contingency Plan." The

national plan is supported by eleven regional plans covering the 50 states, Puerto Rico, and the Virgin Islands. California, Nevada, Arizona, and Hawaii are in Region Nine.

National and regional response teams have been established to carry out the national plan. The response teams include representatives of several Federal agencies. For spills in coastal waters, the regional response team (RRT) is chaired by the United States Coast Guard, while the Environmental Protection Agency provides an RRT chairman for spills in inland waters. In either case, the chair's authority is that of delegating mission assignments to participating Federal agencies. The Federal contingency plan invites State and local government participation. California, in most cases, is represented on the RRT by a ranking Department of Fish and Game officer.

California's oil spill contingency plan, which has been recommended as a model plan by the American Petroleum Institute, is coordinated by a Department of Fish and Game officer. He, as does his Federal counterpart on the RRT, delegates mission assignments to 13 different State agencies. He has the added responsibility to coordinate local government participation. Under the State plan, all 58 counties and 410 incorporated cities have designated a person who, during a spill emergency, will go to the State's on-scene command center to participate in planning and decisions.

Under present law, the primary responsibility for cleaning up oil spills rests with the spiller. If the party responsible for the spill can be identified, possesses adequate financial resources, and is taking the necessary steps agreed upon by the State and Federal agency coordinators to contain and remove the spilled oil,

both State and Federal efforts will be limited to monitoring the cleanup and providing advice. If, on the other hand, the spiller is unknown, the spill response exceeds his financial capabilities, or he refuses to take the necessary steps to contain and remove the spill, the Federal or State agency coordinator will assume the actual contracting for the containment and removal operations. The costs will be paid for from a National Pollution Revolving Fund administered by the Coast Guard. California has a water pollution cleanup and abatement account, but the funds in this account are severely limited. Under a special agreement, California may tap the National Pollution Revolving Fund through the Coast Guard.

FINDING: After the Argo Merchant spill, Congress asked the General Accounting Office (GAO) to investigate the adequacy of the resources available to the Coast Guard to carry out its oil spill responsibilities. The GAO issued a draft report in March, 1978 which concludes that the Coast Guard has only half the personnel needed to conduct its present oil spill duties adequately, and that it needs more equipment.

RECOMMENDATION: Congress should substantially increase the funds appropriated to the Coast Guard for personnel and equipment to conduct its present oil spill responsibilities.

Almost all oil spill containment and recovery equipment in California is owned by private companies, either individually or through cooperative associations. There are five such cooperatives in California, based in Humboldt, San Francisco Bay, Santa Barbara, Los Angeles, and Long Beach harbors. Most of this containment and recovery equipment, and virtually all of the equipment suited for open ocean work, is stored in the Bay Area and in Southern California. This pattern reflects the historical concentration of oil production, transfer,

and storage activities — and thus the most frequent opportunities for spills — in these areas.

The Coast Guard has established three "Strike Teams," based in California, North Carolina, and the Gulf Coast for the purpose of delivering pumps, salvage equipment, high-seas containment and recovery devices, and trained Coast Guard personnel to the scene of major oil spills. The Pacific Strike Team — now based at Hamilton Air Force Base but planning to move to McClellan Air Force Base — maintains about 4,000 feet of heavy-duty boom and seven pumping systems, and has access to another 6,000 feet of boom and nine pumping systems stored at the Gulf Coast and Atlantic Strike Team bases. Some light-weight boom suited for use only in harbors or sheltered waters is stored at Coast Guard bases along the California coast. State and local governments in California do not own significant amounts of oil spill containment or recovery equipment.

North of San Francisco, the Alaskan tanker routes generally lie 100 miles or more offshore, so that if a major spill occurs there, sufficient time would probably exist to deliver containment and recovery equipment from San Francisco before the oil could reach shore. South of San Francisco, though, the tanker routes generally lie close to shore, so that spilled oil from a tanker casualty could move ashore more rapidly. There is almost no heavy-duty oil spill containment or recovery equipment now located along the coast between Monterey and Point Conception, so the central coast region would appear to be the least protected portion of the California coast threatened by major spills from tankers.

FINDING: President Carter's message of March 17, 1977 directed the Coast Guard and EPA, in cooperation with State and local governments,

to improve existing oil spill containment and response capabilities, with the goal of achieving the ability to respond within six hours to a spill of 100,000 tons.

RECOMMENDATION: In carrying out President Carter's directive, the Regional Response Teams for Coast Guard Districts 11 and 12 should seek to establish a minimum response capability for the entire coast, but should place special emphasis on increasing response capability for the central California coast from Point Conception to Monterey.

SECTION B: OIL SPILL RESPONSE DRILLS

FINDING: There is no entirely satisfactory method for evaluating the adequacy of an operator's preparations to deal with an oil spill other than to observe the response to an actual spill. State agencies with permit authority for petroleum terminals have begun to attach conditions requiring the operator to respond to unannounced simulated oil spills. In these exercises, a series of assumptions are made regarding the size and characteristics of a hypothetical spill, the terminal operator is notified that an oil spill with those characteristics is assumed to have taken place at a designated location, and the operator's response is observed. To assist in tracking the movement of the hypothetical oil slick, nontoxic floating material is released at the site of the assumed spill.

RECOMMENDATION:

1. The Legislature should consider enacting legislation requiring all terminal operators to respond to such oil spill drills called by

the State on a suitable periodic basis.

2. Pending such legislative action, State agencies should continue to attach permit conditions requiring operators to respond to such hypothetical spills called by the State.

FINDING: Three such response drills have been called to date in accordance with terminal permits issued by State agencies. Some problems have arisen in judging the overall adequacy of an operator's response, in identifying specific components of an operator's contingency plan, including equipment, personnel training programs, and the field response itself, where improvements need to be made, and in following up to ensure that needed corrections are made. The Department of Fish and Game, which implements the State's oil spill contingency plan, has personnel properly trained and qualified to perform these functions, but not in sufficient numbers to conduct such a program on a regular basis for all terminals in the State. In one such exercise, the State, Federal, local, and industry observers appear to have reached significantly different conclusions regarding the caliber of the operator's responses, and such corrective actions or improvements as might need to be undertaken.

RECOMMENDATION:

1. The Legislature should provide the Department of Fish and Game with additional funds and personnel to increase its capability to participate in staging these drills and providing the necessary follow-up.

2. In staging, observing, and evaluating these drills, State

permitting agencies should invite Coast Guard and industry representatives to contribute their knowledge, advice, comments, and suggestions, but the State should reserve the right to determine the adequacy of a permittee's response, to specify such corrective actions as may need to be taken, and to ensure that these actions are carried out.

3. Permit conditions should explicitly provide the permit-issuing agency the right to call additional drills if the operator's overall response is judged by the permitting agency, after consultation with the Department of Fish and Game, other interested State and local agencies, and the Coast Guard, to be inadequate.

SECTION C: CHEMICAL DISPERSANTS

Chemical dispersants promote the movement of spilled oil from the water surface into the water column, and thereby reduce the potential threat to surface-dwelling organisms such as sea birds and marine mammals, and also to intertidal organisms. Also, using such chemical agents is often substantially less expensive than attempting physical containment and recovery. On the other hand, dispersants are themselves toxic, do not always function effectively, and if successful in dispersing oil into the water column, their use prevents mechanical removal of the oil from the water. In recent years, dispersants have been developed which are apparently less toxic and more effective than earlier products.

FINDING: Present State and Federal policies advocate the mechanical containment and recovery of spilled oil as a first priority. The use of dispersants is permitted only on a case-by-case basis when

Federal and State officials conclude that their use is likely to eliminate a direct and immediate threat to human safety or to a particularly valuable resource which cannot be otherwise protected, and when mechanical containment and recovery devices cannot, for whatever reason, be effectively used.

RECOMMENDATION: The Tanker Task Force supports existing State and Federal policies controlling the use of chemical dispersants, and advocating the development and use of mechanical oil spill containment and recovery devices as a first priority.

SCPCO PROPOSED TEST PROGRAM

The Southern California Petroleum Contingency Organization (SCPCO), an industry-sponsored oil spill clean-up cooperative organization, has applied to the Environmental Protection Agency for an ocean dumping research permit in order to conduct a series of tests and demonstrations off Southern California which would involve the controlled spillage of crude oil. The program proposed by SCPCO calls for six three-day sets of tests conducted over an 18-month period in an area located roughly 30 miles from the mainland and 15 miles from San Clemente and Santa Catalina Islands.

FINDING: Field tests of oil spill clean-up or dispersion equipment and procedures can provide information useful in evaluating and comparing different techniques, which can help to improve the overall effectiveness of oil spill response operations. If the field tests are properly designed, and if suitable precautions are taken, the benefits in terms of useful knowledge gained by using petroleum as the test substance may outweigh the environmental drawbacks associated

with the discharge of petroleum.

RECOMMENDATION: The Task Force endorses the concept of limited field tests of dispersants which promise to improve dispersant application techniques, and to provide better information on the effectiveness and toxicity of chemical dispersants. The first set of tests proposed by SCPCO generally meets these criteria, and the Task Force therefore supports SCPCO's application for a permit to conduct this set of tests.

SECTION D: MISCELLANEOUS OIL SPILL PROVISIONS

OIL SPILL STATISTICS

The Department of Fish and Game compiles and maintains statistics and information on all oil spills occurring in State waters, including estimated amount spilled, type of oil spilled, the responsible party (where known), causes of the spill (where known), and clean-up actions. The Attorney General's Office and the State and Regional Water Resources Control Boards also collect similar information for those spills in which these agencies become involved in civil or criminal proceedings arising from the spillage. These agencies coordinate their actions and information on an *ad hoc* basis.

FINDING: There does not now exist any formal mechanism for distributing these statistics and information to other State agencies with permit or regulatory authority over petroleum bulk transfer facilities, such as the Coastal Commission, the State Lands Commission, or the Bay Conservation and Development Commission. Such information could be

of great value to these agencies in their consideration of permit applications, regulations, special conditions, waivers, and so forth.

RECOMMENDATION: The State agencies which now collect oil spill statistics and information should devise and adopt a procedure for distributing this information on a regular basis to all State agencies possessing permit or regulatory authority over petroleum bulk transfer facilities.

OIL SPILL WORKSHOPS

In recent years, California's Department of Fish and Game has sponsored oil spill workshops in Long Beach, Santa Barbara, and Eureka. In these workshops, the Federal, State, and industry officials who would be involved in the response to an oil spill occurring in that area have briefed local officials and interested private citizens on their respective roles and responsibilities, the procedures likely to be followed during an oil spill emergency, and the ways in which local officials would be able to participate and assist in the clean up effort.

FINDING: These workshops have generally been well received, and have the potential to be helpful not only to concerned local officials and private citizens in California's coastal communities, but also to the government and industry representatives who will be directly involved in the response to oil spills.

RECOMMENDTION: The Department of Fish and Game should continue its oil spill workshop program.

FINDING: One result of the Eureka workshop was the discovery that

no land disposal site approved for the disposal of recovered oil is now available along the California coast north of Fort Bragg. The lack of such a site would cause serious difficulties during the clean-up of an oil spill in this area. Oil industry representatives are aware of this problem, but have, to date, made no provisions to secure access to an approved disposal site for use during an oil spill emergency. Lack of approved disposal sites does not appear to be a problem elsewhere along California's coast.

RECOMMENDATION: The Legislature should hold a public hearing and invite testimony from the Western Oil and Gas Association or other appropriate industry representatives, the North Coast Regional Water Quality Control Board, and the State Interagency Oil Spill Committee to determine why provisions have not yet been made for a suitable land disposal site north of Fort Bragg, and to identify the action needed to ensure access to such a site in that area during an oil spill emergency.

SECTION E: OIL SPILL LIABILITY

STATE

Existing California law regarding liability for damages caused by oil spills is a confusing patchwork of provisions added over the last fifty years to four different California codes, together with court decisions dating back to 1928. California's oil spill liability law is in urgent need of updating and revision.

According to the California Supreme Court, much of the environmental damage that an oil spill can cause, such as destruction or disruption of habitat, death or

injury to nongame species, or reduction of ecosystem diversity or productivity, is real and significant, but difficult or impossible to express in monetary terms for purposes of obtaining compensation.

The Court recognized that statutory damages resulting from successful civil enforcement action are the principal means for the State to collect compensation for these "unquantifiable" damages from the party responsible for the spill.

FINDING: The statutes under which such enforcement actions can be brought limit such statutory damages to not more than $16,000 per day of oil spillage, regardless of how much environmental damage the spill causes. This limit is unrealistically low, and reduces the State's ability to obtain adequate compensation for the environmental damage caused by spills.

RECOMMENDATION: The Tanker Task Force supports the concept of expanded recovery for unquantifiable environmental damages. The Task Force recommends that the Legislature enact statutory damage law which bases the recovery limit on the amount of oil spilled or the time taken for clean-up, so that recovery can more closely reflect the amount of harm caused by an oil spill.

FINDING: The standard of liability to which the party responsible for a spill is held varies significantly depending on the source of the spill. If the spill occurs from a tank vessel or from a blow-out during drilling operations, the spiller can be held strictly liable for the quantifiable damages caused by the spill, that is, without

regard for whether the spill was accidental or intentional.

But if the spill occurs from any other source, such as from petroleum terminals or storage facilities, present law requires proof of negligence or intent before the spiller can be made to pay for the damages caused by the spill. If negligence or intent cannot be proved, the spiller may escape liability for damages altogether.

A strict liability standard is appropriate for spills from all sources. By requiring the utmost care, a strict liability standard provides the maximum incentive to prevent spills. Further, the intricacies of oil transport and transfer operations often makes proving negligence difficult and time consuming, a barrier to recovery which would be eliminated by a strict liability standard. Finally, strict liability, by allowing recovery in all cases, ensures that the environmental costs of oil transport and transfer are borne by those engaged in these enterprises (and ultimately by the consumers of oil), instead of by those persons and natural resources injured by spills.

RECOMMENDATION: The Legislature should enact comprehensive State oil spill liability legislation which provides for recovery of all losses caused by oil spills, and which sets a uniform standard of strict liability for both quantifiable and unquantifiable damages.

FINDING: In addition to petroleum, other hazardous substances, such as ammonia, chlorine, and tetraethyl lead, are transported in California waters. Spills of these and other hazardous substances could

cause even more damage than spills of crude oil or petroleum products.

RECOMMENDATION: The Legislature should enact liability legislation for spills of hazardous substances other than petroleum. Such legislation ought to provide for recovery of all losses caused by spills of these hazardous substances, and should also set a uniform standard of strict liability for both quantifiable and unquantifiable damages.

FEDERAL

Existing Federal law regarding oil spill liability comes from a variety of sources, including the Clean Water Act, the Trans-Alaska Pipeline Authorization Act of 1973, the Outer Continental Shelf Lands Act of 1953, and the Deepwater Ports Act of 1974. Not surprisingly, the Federal law on oil spill liability is almost as varied as California law on the same subject.

Congress is now considering comprehensive oil pollution liability and compensation legislation. The House has passed a bill, H.R. 6803, and similar legislation, S. 2900, has been approved by the Senate Committee on Environment and Public Works. A third bill, S. 2083, is also under consideration. These bills would establish uniform standards of liability for quantifiable damages, and would set up a fund, paid for by a per-barrel tax on oil transported into or produced within the United States, to pay claims for recognized damages occurring from oil spills.

FINDING: The Tanker Task Force endorses the concept of comprehensive Federal oil pollution liability and compensation legislation. However, the legislation passed by the House, as well as the legislation under consideration in the Senate, should be amended to further the best

interests of California and the nation in four major respects:

1. H.R. 6803 and S. 2083 purport to impose strict liability, but provide defenses to liability which would make the overall standard substantially lower than one of genuinely strict liability.

2. H.R. 6803 and S. 2083 only provide compensation for those damages which can be expressed as specific economic losses. Should such a provision become law, it would not be possible to obtain compensation for unquantifiable environmental damages under Federal law.

3. H.R. 6803 would preempt States from enacting or enforcing legislation regarding liability for quantifiable oil spill damages. In view of the significant loopholes contained in the House bill, Federal preemption of State liability legislation would be a serious mistake. The principal goal of Federal preemption should be to prevent any party from recovering compensation more than once for the same damages arising from the same spill. All that is needed to accomplish this is a provision prohibiting double recovery, such as is contained in the Deepwater Ports Act.

4. H.R. 6803 and S. 2083 would prohibit a claimant from proceeding directly against a spiller who disputes liability. Such a provision could unnecessarily delay the imposition of liability, and thus reduce the incentive to prevent spillage.

RECOMMENDATION: The Tanker Task Force supports the enactment of Federal oil spill liability which:

1. Sets a uniform standard of strict liability without regard to fault.

2. Provides adequate compensation for quantifiable and unquantifiable damages.

3. Does not preempt State oil spill liability legislation.

4. Prohibits double recovery for the same damages.

5. Permits a claimant to proceed directly against any spiller, including a spiller who denies or disputes liability.

FINDING: A resolution, SJR 47, has been introduced in the Legislature which would urge Congress to enact oil spill liability legislation with provisions similar to those recommended by the Tanker Task Force.

RECOMMENDATION: The Tanker Task Force supports SJR 47, and recommends that the Legislature adopt it in a timely fashion so that it can be transmitted to Congress for its consideration as it acts on Federal oil spill liability legislation.

GLOSSARY

BALLAST: A substance carried aboard a ship empty of cargo, for the purpose of submerging the rudder and propeller sufficiently to maintain stability, and to allow the ship to maneuver safely. Tankers must carry about one-third or more of their total capacity in ballast when on a return (empty) leg of a voyage. Usually seawater is used for ballast. Ballast may be loaded into cargo tanks, or, when segregated ballast is provided, into separate ballast tanks.

BALLAST, SEGREGATED: A term describing the provision of separate tanks for ballast water only, thus eliminating the need to carry ballast in cargo oil tanks. Segregated ballast tanks add to the total volume required in a tanker.

BARREL/GALLON/TON: Barrels and gallons are measures of volume, with one barrel equal to 42 U.S. gallons. A ton is a measure of weight equal to 2240 lbs. The number of barrels of oil in a ton vary according to the specific gravity of the oil, but there are usually 6.8 - 7.5 barrels per ton.

BUNKER: A tank on a ship for storage of fuel to be burned by the ship.

BUNKERING: The loading of fuel used on board a ship.

CLASSIFICATION SOCIETY: A private organization that supervises ships during their construction and afterward, in respect to their seaworthiness, and the placing of ships in grades or "classes" according to the society's rules for each particular type. It is not compulsory by law that a shipowner have his ship built according to the rules of any classification society; but in practice, the difficulty of securing satisfactory insurance rates for an unclassed ship makes it a commercial obligation.

DISPLACEMENT, LIGHT: The weight of a ship in tons (2240 lbs.) not including stores, cargo and bunkers.

DISPLACEMENT, LOADED: The weight of a ship in tons (2240 lbs.) including stores, cargo and bunker.

DOUBLE BOTTOM: A ship construction term referring to two separate but continuous and watertight plating structures along some length and width of a ship's bottom. Double bottoms are frequently fitted on general cargo ships and passenger ships but rarely have been fitted on tankers except for specialized carriers (i.e., ore/bulk/oil carriers). Double bottoms usually enclose a compartmented space of up to 10 feet in height along the ship's bottom.

DOUBLE SIDE: A ship construction term, like "double bottom," denoting an added side-shell plating structure fitted within the ship. Such double sides may form enclosed compartmented spaces, which offer some protection against spillage in collisions that rupture the outer shell.

DOUBLE HULL: A method of ship construction incorporating both double bottoms and double sides.

DRAFT: The depth of a ship below the waterline, measured vertically to the lowest part of the hull, propellers or other projecting point.

DRY DOCK: An enclosed basin into which a ship is taken for underwater cleaning and repairing. It is fitted with watertight entrance gates which when closed permit the dock to be pumped dry. Also called graving dock, graving dry dock.

FLAG OF REGISTRY: The flag indicating the nation under whose jurisdiction a ship is registered. Ships are always registered under the laws of one nation. In registering, they designate a port of that nation as the "Home Port." The ship itself is not required to use that port, but most countries require the owner to maintain a place of business within the country. The ship is thus considered to "fly the flag" of that country. Many companies establish subsidiaries in countries other than their home location and register ships under the flag of that country.

GAS-FREE: To flush an empty cargo tank with air for the purpose of providing an atmosphere in the tank sufficiently free of toxic or explosive gases to allow performance of specific tasks within the tank.

INERT GAS SYSTEM: A device used to fill empty space in cargo tanks on a tanker with an inert gas in order to eliminate danger of an explosive atmosphere created by petroleum fumes mixing with air. The "inert" gas used is usually boiler exhaust gas which contains only insignificant amounts of the free oxygen necessary for an explosive mixture.

LIGHTERING: A method of offloading tankers at sea or outside of ports, usually from large tankers to smaller tankers or tank barges which, in turn, continue into a discharge port. Lightering is a common practice at entrances to certain ports or terminals which cannot handle the deep drafts of large tankers. The large tankers can thus be partially unloaded, permitting them to ride at lightened draft so they can enter the restricted-draft harbor or terminal.

LOAD LINE: The line on a ship indicating the maximum depth to which that ship can sink when loaded with cargo. Also known as the ship's "marks".

PURGE: To flush an empty cargo tank with inert gas to reduce the hydrocarbon vapor concentration in the tank.

SEAWORTHINESS CERTIFICATE: A certificate issued by a classification society surveyor to allow a ship to proceed after she has met with a mishap that may have affected its seaworthiness. It is frequently issued to enable a ship to proceed, after temporary repairs have been effected, to another port where permanent repairs are then carried out.

SLOP TANK: A tank designated to store oily waste, usually dirty ballast water, for subsequent disposal.

STATE, COASTAL: The state (nation) whose coast is adjacent to the zone of use (contiguous or extended) of a ship, and which may have legal jurisdiction over the operation of that ship entering the zone, whether or not it is destined for a port of the state, and regardless of the flag of registry.

STATE, FLAG: The state (nation) in which a ship is registered, and which has legal jurisdiction over the operation of that ship, regardless of where the ship is operating.

STATE, PORT: The state (nation) in which is located the port of use of a ship, and which has legal jurisdiction over those ships which enter the port, irrespective of the flag of registry.

T-2: A tanker of 16,600 dwt and a speed of 14.5 knots. 515 T-2 tankers were built in the United States during World War II, many of which are still in use. The T-2 is used as a reference standard in the tanker industry for measuring haulage requirements and capacities.

TANK BARGE: A nonself-propelled vessel used to carry crude oil or petroleum products in bulk.

TANK VESSEL OR TANKER: A self-propelled vessel used to carry crude oil or petroleum products in bulk.

TONNAGE, DEADWEIGHT: A measure of the total carrying capacity of a tanker (or other ship) in long tons of 2,240 pounds. Deadweight tonnage (dwt) of a tanker includes the weight of all cargo oil plus the weight of fuel, stores, water and crew. In most tankers, the deadweight capacity is within five percent of the actual cargo capacity. For example, a fully-loaded 100,000 dwt tanker would be able to carry approximately 95,000 tons of oil.

TONNAGE, GROSS: The total volume of enclosed space in a ship, expressed in units of 100 cubic feet.

TONNAGE, NET: The total volume of enclosed space in a ship available for carrying cargo (or passengers), equals gross tonnage minus the space occupied by crew accommodations, machinery, navigation equipment and bunkers.

VLCC: Very large crude carrier, a crude oil tanker of 160,000 — 400,000 dwt.